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 1,700 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 $5 million in prizes and scholarships annually.
# Intel International Science and Engineering Fair 2014

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Welcome from Intel

To Intel ISEF Finalists, Educators, Families, and Fair Directors:

On behalf of the Intel Foundation, it is my pleasure to welcome you to the 2014 Intel International Science and Engineering Fair. To qualify for Intel ISEF is a significant accomplishment in itself – congratulations on making it to the top!

To the teams of parents, educators, fair directors and others who lent their time, support and encouragement to help the students get here – thank you. Without you, these young scientists may have missed out on a tremendous opportunity for exposure and inspiration, and the world of science would have suffered for not having seen their incredible work. Students, I have no doubt that this week will be one of the most memorable of your lives. As you go on to pursue your dreams in higher education and professional careers, I hope that you will recall a few gems of wisdom from this unique occasion.

**Your ideas are important.** Yes, celebrities and professional athletes attract cameras, attention and accolades, but their impact on the world is finite. Innovators like you, however, can change the world for generations. The global challenges we face are ever-daunting, but never has a generation of scientists been so connected and empowered to face them. Today’s technology enables unprecedented innovation and collaboration. Continue to envision ideas, catalyze with technology, and embrace your power to change the world.

**Collaboration is key.** As you encounter peers from more than 70 countries spanning the globe, your preconceptions will shatter, common ground will emerge, and lifelong friendships will be forged. My wish is that you carry this sense of camaraderie with you into the future and that you choose to collaborate with your contemporaries. That’s the path to a better future.

**Knowledge is power, and with power comes responsibility.** It takes an extraordinary combination of talent, desire, support and access to make it to the ranks of Intel ISEF finalists. No doubt there are many talented students who lacked the support or access needed to get here today. Our hope for all Intel ISEF finalists is that you will share your knowledge and experience as role models for the next generation. You have just as much power as a rock star, a celebrity or a pro athlete to be a catalyst in the lives of young people.

In closing, I wish you every success in the coming week and beyond. I look forward to witnessing your inventions, innovations and inspiration.

Regards,

Justin Rattner
President, Intel Foundation
Welcome to the Intel International Science and Engineering Fair 2014!

Intel ISEF, a program of Society for Science & the Public (SSP), represents the world's best science from young researchers. More than 1,700 finalists have traveled here from around the world to present their projects. We applaud the accomplishments of these students, and hope that they will treat this special event not only as an opportunity to compete, but also as a chance to learn, make connections, and further develop their interest in the fields of science, technology, engineering and mathematics (STEM).

Intel ISEF is not only a platform to acknowledge and celebrate the success of the finalists here this week. Intel ISEF is also a chance for each of you to be surrounded by other students and adults who love science and engineering as much as you do. It takes a dedicated and informed community to kindle and support a student's interest in scientific research. So, in addition to congratulating the finalists, we also want to acknowledge, congratulate and thank the educators, parents, and mentors who have provided this support.

We also thank the Intel Foundation and Intel Corporation for their continued partnership with SSP. Intel’s global leadership and commitment to STEM education is an inspiring example of corporate investment in the future. SSP also thanks the many organizations that have provided support and awards for Intel ISEF 2014. Finally, SSP salutes the hard-working Intel ISEF volunteers in Los Angeles 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.

I hope each of you has a rewarding, inspiring, and memorable time at Intel ISEF 2014.

Sincerely yours,

H. Robert Horvitz
Chair, SSP Board of Trustees
Welcome from the U.S. Senate

State of California
Barbara Boxer
U.S. Senate

Dear Friends:

As a United States Senator who has the great privilege of representing the State of California, I send my greetings to everyone gathered for the 2014 Intel International Engineering and Science Fair, and my congratulations to all of the extraordinarily talented students gathered in Los Angeles.

The Intel International Science and Engineering Fair is bringing together more than 1,600 high school students from across 70 countries, regions, and territories to present their independent research. Events such as this are crucial in encouraging the creativity and determination within the young people that will one day be our leading scientists, mathematicians, and engineers.

I always enjoy seeing young people putting forth their talents by participating in their community and excelling in school, especially in the fields of science, technology, engineering, and mathematics. I commend all the students who are participating in this prestigious competition, and I thank the many organizers and supporters who have made this annual fair a success.

Again, you have my best wishes for a wonderful and inspiring Intel International Science and Engineering Fair.

Sincerely,

Barbara Boxer
United States Senator
State of California  
Dianne Feinstein  
U.S. Senate  

May 11, 2014

Intel International Science and Engineering Fair  
Los Angeles Convention Center  
1201 South Figueroa Street  
Los Angeles, California 90015  

Dear Friends:

It gives me great pleasure to extend my warmest greetings to all those attending the 2014 Intel International Science and Engineering Fair.

Since its inception, the Intel International Science and Engineering Fair (Intel ISEF) has promoted original research and progress in technology, science, engineering and math. Intel ISEF gives more than 1600 high school students the opportunity to show off their talent and dedication through exceptional projects representing the next generation of innovation. I commend each participant’s devotion to the advancement of science and technology.

As your United States Senator representing the State of California, I applaud your hard work and achievements. Please accept my best wishes for a most successful competition.

With warmest personal regards,

Sincerely yours,

Dianne Feinstein  
United States Senator  

http://fenstein.senate.gov
May 11 2014

Dear Friends,

On behalf of the City of Los Angeles, I welcome you to the Intel International Science and Engineering Fair 2014 (Intel ISEF). Congratulations on being selected from among the millions of students that participated in local and state science fairs across the globe as part of the largest pre-college science competition in the world.

Los Angeles is proud to host these distinguished young minds from more than 70 countries, regions, and territories as they showcase their hard work and compete for more than $4 million in awards.

Thank you to all the teachers, families, and supporters of these young scientists for enabling them to make genuinely impressive groundbreaking research, and thank you to Intel and SSP — and all the event coordinators, judges, and volunteers — that have made this gathering of innovation possible.

I send you my best wishes for a rewarding and inspiring fair.

Sincerely,

ERIC GARCETTI
Mayor
About Los Angeles
Los Angeles’ incredible attractions, hotels, restaurants, museums, activities, 75 miles of coastline and stunning, rugged mountains and signature blue skies and year-round warm weather draw more than 42 million visitors a year. Los Angeles invented the magic of movies and television, and it remains the entertainment capital of the world today.

Whether in Los Angeles for business, conventions, or vacation, travelers will discover that L.A. is a collection of unique neighborhoods, each a destination in its own right. From the funky Venice Boardwalk, to the nightclubs and showbiz attractions of Hollywood, to the floating museum Battleship USS Iowa in San Pedro, to Downtown’s highly acclaimed new restaurants, to the tours and TV show tapings of L.A.’s working film and TV studios, to world-class shopping at the Grove, to hiking in Griffith Park to see the Hollywood Sign – visitors will find something for every taste. And if you want to get away for a day, L.A. is a day’s drive from dramatic deserts, mountains, forests and even ski resorts.

Los Angeles’ glamour can only be matched by its culture. L.A. has 105 museums and 225 theaters, including The Music Center, Walt Disney Concert Hall, the Natural History Museum, LACMA, MOCA, the Getty Center, California Science Center, and many others.

Diversity permeates every aspect of Los Angeles, where over 200 languages are spoken, making it one of the most globalized cities in the world. The historic ethnic neighborhoods of Chinatown, Little Tokyo, Olvera Street, Koreatown and many others, are each filled with authentic boutiques, culture and restaurants. Los Angeles offers a wealth and diversity of experiences that few other destinations in the world can match.
Society for Science & the Public (SSP) acknowledges with gratitude

Intel Corporation
and
Intel Foundation

for their support of the Intel ISEF 2014.

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 2014 Education Outreach Program to be attended by more than 5,000 local middle and high school students and their teachers.

Alcoa Foundation
Aquarium of the Pacific
Broadcom Foundation
Fisher Science Education, part of Thermo Fisher Scientific
GoDaddy
LaMotte Company
OPT Telescopes
Ricoh Americas Corporation
Southern California Edison
United Airlines Foundation
Ward's Science
Dr. Nelson Ying

The sponsors are proud to support students and hope their participation will inspire them and their teachers, parents, scientists and others.
This year, more than 1,700 students earned finalist status at the Intel ISEF in Los Angeles as a result of their excellent performance at an Intel ISEF-affiliated fair at a local, regional, or national level.

In 2014, finalists will compete for more than $5 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.

2014 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**

Three finalists will win an all-expense-paid trip 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**

The projects will win an all-expense-paid trip enables attendance at the European Union Contest for Young Scientists—held in Warsaw, Poland in 2014.

**Innovation Exploration Award**

For the second time at Intel ISEF, in collaboration with Intel Corporation, a number of students will have the opportunity to be a part of a behind-the-scenes visit to the Jet Propulsion Laboratory in Pasadena, California, and also visit world renowned Caltech, meet with scientists, present their own work, and see what is next in space exploration.
London International Youth Science Forum
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.

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

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 2014 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
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
Association for the Advancement of Artificial Intelligence
Astronomical Society of the Pacific
and the American Astronomical Society
ASU Rob and Melani Walton Sustainability Solutions Initiatives
Charity Foundation - Open Hearts of Ukraine
China Association for Science and Technology – CAST
Coalition for Plasma Science – CPS
Consortium for Ocean Leadership
Drexel Smart House
Drexel University
European Organization for Nuclear Research – CERN
Florida Institute of Technology
Fondazione Bruno Kessler
Fundació Víctor Grífols i Lucas
GoDaddy
Google
IEEE Foundation
IEEE Computer Society
Intel Foundation
Intel® Open Source Technology Center
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
Monsanto Company
Mu Alpha Theta, National High School and Two-Year College Mathematics Honor Society
National Aeronautics and Space Administration
National Anti-Vivisection Society
National Institute on Drug Abuse, National Institutes of Health and the Friends of NIDA
National Oceanic and Atmospheric Administration – NOAA
Office of Naval Research on behalf of the United States Navy and Marine Corps
Patent and Trademark Office Society
Psi Chi, The International Honor Society in Psychology
Ricoh Americas Corporation
Sigma Xi, The Scientific Research Society
SmartAmerica Challenge
Society for Experimental Mechanics, Inc.
Society of Experimental Test Pilots
Society of Exploration Geophysicists
SpaceX
SPIE, the international society for optics and photonics
United Airlines Foundation
U.S. Agency for International Development
U.S. Environmental Protection Agency
United Technologies Corporation
University of the Sciences in Philadelphia
West Virginia University
Wolfram Research, Inc.
World Economic Forum

Visit student.societyforscience.org/special-awards-organizations 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 2014 winner of the Gordon E. Moore Award, who will be recognized with an award in the amount of $75,000.
THE FUTURE IS BRIGHT

Congratulations to past winners of the Intel International Science and Engineering Fair (Intel ISEF), a program of Society for Science & the Public. Finalists have gone on to do amazing things, start non-profits around the world, win awards such as the MacArthur “Genius” award, start successful companies and become professors at major universities.

Intel’s commitment to education ranges from science competitions that encourage young thinkers, scientists, and entrepreneurs, to collaborative programs with educational and governmental organizations.

By empowering students around the world, Intel isn’t just enabling them to succeed in the global economy—we’re creating the next great wave of world-changing innovators.

See what’s happening at Intel ISEF: www.intel.com/innovators
**Auditorium Safety**
Sticks and large flags are prohibited during the Awards Ceremonies. Please do not bring flags or state symbols on stage during the presentation of awards. Sticks from flags will be confiscated at the door.

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

**Hotels**

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<tr>
<th>Hotels</th>
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<th>Phone</th>
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<tr>
<td>Hilton Checkers</td>
<td>535 S. Grand Avenue</td>
<td>(213) 624-0000</td>
</tr>
<tr>
<td>Hotel Figueroa</td>
<td>939 S. Figueroa Street</td>
<td>(213) 627-8971</td>
</tr>
<tr>
<td>JW Marriott Los Angeles LA LIVE</td>
<td>900 W. Olympic Boulevard</td>
<td>(213) 765-8600</td>
</tr>
<tr>
<td>LA Hotel Downtown</td>
<td>333 S. Figueroa Street</td>
<td>(213) 617-1133</td>
</tr>
<tr>
<td>Los Angeles Athletic Club</td>
<td>431 W. 7th Street</td>
<td>(213) 625-2211</td>
</tr>
<tr>
<td>Luxe City Center Hotel</td>
<td>1020 S. Figueroa Street</td>
<td>(213) 748-1291</td>
</tr>
<tr>
<td>Millennium Biltmore</td>
<td>506 S. Grand Avenue</td>
<td>(213) 624-1011</td>
</tr>
<tr>
<td>Omni Los Angeles Hotel</td>
<td>251 S. Olive Street</td>
<td>(800) 843-6664</td>
</tr>
<tr>
<td>Ritz Milner Hotel</td>
<td>813 S. Flower Street</td>
<td>(213) 627-6981</td>
</tr>
<tr>
<td>Sheraton Los Angeles Downtown</td>
<td>711 S. Hope Street</td>
<td>(213) 488-3500</td>
</tr>
<tr>
<td>The Standard Downtown LA</td>
<td>550 S. Flower Street</td>
<td>(213) 892-8080</td>
</tr>
<tr>
<td>Westin Bonaventure</td>
<td>404 S. Figueroa Street</td>
<td>(213) 624-1000</td>
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**About the Los Angeles Convention Center**
Located in the heart of downtown Los Angeles and part of the LA Live Entertainment Campus, the Gold LEED-certified Los Angeles Convention Center (LACC) is one of the most efficiently designed and technologically advanced convention and exhibition venues in the nation. The LACC is a smoke-free environment. Levy Restaurants is the exclusive provider of food and beverage at the LACC. Outside food and beverage is strictly prohibited.

Intel ISEF participants must wear their name badges to participate in fair activities and events. Admission to all Intel ISEF functions at the Los Angeles Convention Center (LACC) is restricted to persons wearing an Intel ISEF name badge.

**By entering the Intel International Science and Engineering Fair 2014 (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.**
Visit Science News for Students to read about Intel ISEF winners and other interesting stories ... sciencenewsforstudents.org

Visit the Intel ISEF Expo 2014
Los Angeles Convention Center
Concourse Hall

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

We encourage you to stop by the Concourse Hall:

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<th>Time</th>
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<td>Monday, May 12</td>
<td>2:00 p.m.–6:00 p.m.</td>
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<tr>
<td>Tuesday, May 13</td>
<td>9:00 a.m.–5:00 p.m.</td>
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<tr>
<td></td>
<td>Free refreshments served 9:00 a.m.–11:00 a.m.</td>
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<tr>
<td>Thursday, May 15</td>
<td>8:00 a.m.–5:00 p.m.</td>
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All Intel ISEF 2014 events take place at the Los Angeles Convention Center (LACC) unless otherwise noted.

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<th>Day</th>
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<td>408 A</td>
<td>5/11 &amp; 5/15</td>
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<tr>
<td>AP Testing</td>
<td>402 A, 403 A/B</td>
<td>5/12–5/16</td>
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<tr>
<td>Excellence in Science &amp; Technology Panel</td>
<td>Halls G/H</td>
<td>5/13</td>
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<td>Finalists Project Exhibits</td>
<td>Halls J/K</td>
<td>5/11–5/16</td>
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<td>Finalist Resource Center</td>
<td>406 A/B</td>
<td>5/11–5/13</td>
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<tr>
<td>Grand Awards Ceremony</td>
<td>Halls G/H</td>
<td>5/16</td>
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<td>Housing Information</td>
<td>South Hall Lobby</td>
<td>5/10–5/15</td>
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<tr>
<td>HUB (Center of Exhibit Hall)</td>
<td>Halls J/K</td>
<td>5/11–5/16</td>
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<td>IB Testing</td>
<td>402 B</td>
<td>5/12–5/16</td>
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<td>Information Desk</td>
<td>South Hall Lobby</td>
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<td>The Intel Quad</td>
<td>South Hall Lobby</td>
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<td>Intel ISEF Expo 2014</td>
<td>Concourse Hall</td>
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<td>Lost and Found</td>
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<td>Opening Ceremony</td>
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<td>Public Visitation</td>
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<td>Retail Store</td>
<td>Halls J/K Concourse</td>
<td>5/10–5/16</td>
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<td>Scientific Review Committee (SRC)</td>
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<td>Society for Science &amp; the Public Information Booth</td>
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<td>Special Award Ceremony</td>
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<td>5/15</td>
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<tr>
<td>Student Pin Exchange</td>
<td>J. W. Marriott Hotel</td>
<td>5/11</td>
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<tr>
<td>(Open to Finalists and Student Observers Only)</td>
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<tr>
<td>Symposia</td>
<td>408-411</td>
<td>5/12–5/15</td>
</tr>
<tr>
<td>Tour Desk</td>
<td>South Hall Lobby</td>
<td>5/10–5/16</td>
</tr>
<tr>
<td>Volunteer Office</td>
<td>306 A/B</td>
<td>5/9–5/16</td>
</tr>
</tbody>
</table>

Visit student.societyforscience.org/attendees for schedule updates throughout the week.
Open Daily
Finalist Exhibit Hall and the HUB (Halls J/K)
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 Infrctions only
9:30 a.m.–11:30 a.m.—Finalists only for Press/PR purposes
Wednesday 7:45 a.m.–11:45 a.m.,
1:15 p.m.–3:15 p.m., 3:15 p.m.–5:00 p.m.—Finalists & Judges only
Thursday 9:00 a.m.–9:00 p.m.—Public Visitation Day
Friday Noon–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 Quad
Sunday 3:00 p.m.–10:00 p.m.
Monday–Thursday 8:00 a.m.–6:00 p.m.

Intel ISEF Expo 2014 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
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 3:00 p.m.–6:00 p.m.
Sunday–Tuesday 8:00 a.m.–7:00 p.m.
Wednesday–Thursday 8:00 a.m.–5:00 p.m.
Friday 11:00 a.m.–2:00 p.m.

Official Party Registration
Saturday 3:00 p.m.–6:00 p.m.
Sunday–Tuesday 8:00 a.m.–9:00 a.m.
Wednesday 7:00 a.m.–9:00 a.m.
Thursday 8:00 a.m.–7:00 p.m.
Friday 7:00 a.m.–9:00 a.m.

Retail Store
Saturday 3:00 p.m.–6:00 p.m.
Sunday–Monday 8:00 a.m.–7:00 p.m.
Tuesday–Wednesday 8:00 a.m.–6:00 p.m.
Thursday 8:00 a.m.–7:00 p.m.
Friday 8:00 a.m.–2:00 p.m.

Tour Booth
Sunday–Friday 8:00 a.m.–5:30 p.m.
Los Angeles Convention Center

1. Hilton Checkers Los Angeles
   535 S Grand Ave

2. Hotel Figueroa
   939 S Figueroa St

3. JW Marriott Hotel Los Angeles at L.A. LIVE
   900 W Olympic Blvd

4. LA Hotel Downtown
   333 S Figueroa St

5. Los Angeles Athletic Club
   431 W 7th St

6. Luxe City Center Hotel
   1020 S Figueroa St

7. Millennium Biltmore Hotel
   506 S Grand Ave

8. Omni Los Angeles
   251 S Olive St

9. Ritz Milner Los Angeles
   813 S Flower St

10. Sheraton Los Angeles Downtown Hotel
    711 S Hope St

11. The Standard Downtown LA
    550 S Flower St

12. The Westin Bonaventure Hotel & Suites
    404 S Figueroa St
**Sunday, May 11**

See page 167– for hours and locations of daily recurring events and resource desks. All events take place in the Los Angeles Convention Center (LACC) unless otherwise noted.

8:00 a.m.—5:00 p.m. **Project Drop-Off**  
LACC South Hall J/K Loading Dock  
(Afterwards by appt.)  
Finalists transporting their own projects may unload them only if registered. Each item must be clearly marked with Finalist’s name, address and fair ID number. Only Fair Officials are permitted on the floor before 8:00 a.m. Sunday.

8:00 a.m.—8:00 p.m. **Setup of Projects/Display & Safety Inspections**  
Halls J/K

8:00 a.m.—8:00 p.m. **Scientific Review Committee (SRC) Interviews**  
404AB  
Projects must be reviewed and cleared by the SRC before they may be set up. An SRC project infraction list will be posted Saturday, May 10 at student.societyforscience.org/attendees.

3:00 p.m.—10:00 p.m. **The Intel Quad**  
South Hall Lobby  
Come relax and unwind at the Intel Quad Grab a seat and access the wireless internet or connect on a sleek 2in1 device – a laptop and tablet in one. Enjoy the open space for collaboration, interact and play with a variety of technology-driven re-inspired carnival games, take a snapshot in the photo booth!

5:00 p.m.—6:00 p.m. **Advisory Council Meeting**  
408A

7:00 p.m.—9:00 p.m. **Student Pin Exchange**  
JW Marriott Hotel, Diamond Ballroom  
*Finalists and Student Observers Only—Casual Attire*  
This icebreaker event is for Finalists and Student Observers, who are invited to trade pins and to meet new friends. There will be food, music, and good times for all.

**Monday, May 12**

8:00 a.m.—Noon **SRC Interviews**  
404AB

8:00 a.m.—6:00 p.m. **Project Setup/Display & Safety Inspection**  
Halls J/K  
Finalists transporting their own projects may unload them only if registered. Each item must be clearly marked with Finalist’s name, address, and fair ID number.

8:00 a.m.—6:00 p.m. **The Intel Quad**  
South Hall Lobby  
Come relax and unwind at the Intel Quad Grab a seat and access the wireless internet or connect on a sleek 2in1 device – a laptop and tablet in one. Enjoy the open space for collaboration, interact and play with a variety of technology-driven re-inspired carnival games, take a snapshot in the photo booth!

9:00 a.m.—4:30 p.m. **Symposia**  
408-411  
See full schedule on pages 30–37.

2:00 p.m. - 6:00 p.m. **Intel ISEF Expo 2014**  
Concourse Hall  
All Intel ISEF 2014 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.

3:30 p.m.—6:30 p.m. **Opening Ceremony Dinner**  
West Hall B  
All registered attendees are welcome.

6:30 p.m.—7:00 p.m. **Opening Ceremony Pre-Show**  
**Casual Attire— Doors open at 6:00 p.m.**
Opening Ceremony
Monday, May 12
Los Angeles Convention Center
Halls G/H

Mick Ebeling
Founder and CEO
Not Impossible, LLC.

Your week at Intel ISEF 2014 kicks off with the Opening Ceremony. This high energy event will be led by co-host, Kyle Hill, *Discover Magazine* science writer and TV correspondent. This year’s keynote speaker believes in technology for the sake of humanity; he is Mick Ebeling, Founder and CEO of Not Impossible, LLC, an organization that develops creative solutions to real-world problems, then produces media to ensure those solutions take flight.

Inspired by an article he’d read, Ebeling flew to Sudan to 3D-print and fit prosthetic limbs for children of the war-torn region, then left the equipment behind with locals he’d trained who continued after he left, thus establishing the world’s first 3D printing prosthetic lab and training facility.

Activated by his motto, “If not now, when? If not me, who?” Mick’s Not Impossible endeavors came to prominence with the Eyewriter: a DIY, open-source, low-cost device that enables individuals with paralysis to communicate and create art using only the movement of their eyes.
### Opening Ceremony
**Halls G/H**
Sponsored by Intel Corporation

Your week at Intel ISEF 2014 kicks off with the Opening Ceremony. This high energy event will be led by host, Kyle Hill, *Discover Magazine* science writer and TV correspondent. The co-host will be Christina Ochoa Lopez who is the grand-niece of Nobel Laureate, Severo Ochoa. Christina is a scientist and an actress who has appeared in Modern Family. This year's keynote speaker Mick Ebeling, Founder and CEO of Not Impossible, LLC, an organization that develops creative solutions to real-world problems, then produces media to ensure those solutions take flight. Inspired by an article he'd read, Ebeling flew to Sudan to 3D-print and fit prosthetic limbs for children of the war-torn region, then left the equipment behind with locals he'd trained who continued after he left, thus establishing the world's first 3D printing prosthetic lab and training facility. Activated by his motto, “If not now, when? If not me, who?” Mick's Not Impossible endeavors came to prominence with the Eyewriter: a DIY, open-source, low-cost device that enables individuals with paralysis to communicate and create art using only the movement of their eyes.

### Final Project Infractions List
8:00 p.m.

Posted at Registration, outside of Exhibit Halls, and on student.societyforscience.org/attendees.

### Tuesday, May 13

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</table>
| 8:00 a.m.–9:30 a.m. | Project Infraction Clearance  
Halls J/K  
Both the Scientific Review Committee and Display & Safety Committee will have conducted a final review of ALL projects on Monday afternoon. If any problems with a project are identified during that review, the Finalist’s booth number will be posted outside the Exhibit Hall. Only those Finalists with identified problems will be permitted in the Exhibit Hall beginning at 8:00 a.m. A project cannot be judged unless all problems have been cleared by 9:30 a.m., Tuesday, May 13. |
| 8:00 a.m.–6:00 p.m. | The Intel Quad  
South Hall Lobby  
Come relax and unwind at the Intel Quad Grab a seat and access the wireless internet or connect on a sleek 2in1 device – a laptop and tablet in one. Enjoy the open space for collaboration, interact and play with a variety of technology-driven re-inspired carnival games, take a snapshot in the photo booth, meet Jimmy the Robot and more! |
| 9:00 a.m.–5:00 p.m. | Symposia  
See full schedule on pages 30–37.  
408-411 |
| 9:00 a.m.–5:00 p.m. | Intel ISEF Expo 2014  
Concourse Hall  
From 9:00 a.m. until 11:00 a.m., come by for complimentary donuts and coffee and visit with numerous vendors in the science and education industries. |
| 9:30 a.m.–11:30 a.m. | Press/Public Relations Time with Finalists  
Halls J/K  
All finalists have an opportunity for scheduled press interviews, as well as to be available for impromptu visits from visiting sponsors and dignitaries and to check their booth area in the Exhibit Hall. |
| 2:00 p.m.–4:00 p.m. | Excellence in Science and Technology Panel  
Halls G/H  
*Presented by Intel Corporation —Casual Attire*  
All attendees are invited to a conversation with Nobel Prize winners Mike Bishop, Martin Chalfie, H. Robert Horvitz, Harry Kroto, and John Mather and Draper Prize winner Frances Arnold. The panel will be moderated by NPR Science Correspondent Joe Palca. |
Don’t miss the  
Excellence in Science and Technology Discussion Panel  
Tuesday, May 13, 2:00 p.m.  
Los Angeles Convention Center, Exhibit Halls G/H

Frances Arnold  
California Institute of Technology  
Draper Prize  
2011

J. Michael Bishop  
University of California, San Francisco  
Nobel Prize – Physiology or Medicine  
1989

Martin Chalfie  
Columbia University  
Nobel Prize – Chemistry  
2008

H. Robert Horvitz  
Massachusetts Institute of Technology  
Nobel Prize – Physiology or Medicine  
2002

Sir Harold Kroto  
Florida State University  
Nobel Prize – Chemistry  
1996

John Mather  
NASA Goddard Space Flight Center  
Nobel Prize — Physics  
2006

presented by  
Intel Corporation

Joe Palca  
Science Correspondent, NPR  
Moderator
7:30 p.m.–9:30 p.m.  Intel ISEF Night at LA Live—Club Nokia, the Grammy Museum, Target Terrace, Tom's Urban and Lucky Strike: LA Live complex, 800 West Olympic Boulevard (next to the JW Marriott and across from the Staples Center)

All registered Official Party members are invited to this round robin event. At Club Nokia, Finalists and Observers only will be able to dance the night away at a DJ-hosted dance party in one of downtown Los Angeles' hottest night clubs. Video games will be featured in the VIP section of Club Nokia and food will be served throughout the venue.

Students and adults alike may visit the Grammy Museum, Target Terrace, Tom's Urban and/or Lucky Strike. At the Grammy Museum, learn more about this amazing accolade given by the National Academy of Recording Arts and Sciences of the United States to recognize outstanding achievement in the music industry and the artists that have received such an honor. The museum features recording technology, Hall of Fame galleries and numerous special exhibits such as Bruce Springsteen, Barry White and the finest in jazz. At Target Terrace, you can eat dinner while playing games featured by Two Bit Circus and its STEAM Carnival, a modern traveling carnival with high tech games, robots, fire and lasers. Lucky Strike is an upscale bowling alley featuring 18 lanes and 2 billiards tables. Shoes and bowling are free for Intel ISEF participants during this event as is dinner. Dinner will also be served at LA Live's hottest new restaurant Tom's Urban, which is packed with video screens for watching that night's sporting events. You MUST wear your Intel ISEF badge in order to get into any of the venues. You are encouraged to move among the venues which are adjacent to each other in the LA Live complex.

**Wednesday, May 14**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</table>
| 7:45 a.m.–11:45 a.m. | Exhibit Hall Open  
**Finalists at Projects for Interviews—Professional Attire**  
Finalists & Judges only |
| 8:00 a.m.–6:00 p.m.   | The Intel Quad  
**South Hall Lobby**  
Come relax and unwind at the Intel Quad Grab a seat and access the wireless internet or connect on a sleek 2in1 device – a laptop and tablet in one. Enjoy the open space for collaboration, interact and play with a variety of technology-driven re-inspired carnival games, take a snapshot in the photo booth! |
| 9:00 a.m.–4:30 p.m. | Symposia  
See full schedule on pages 30–37. |
| 11:45 a.m.–1:00 p.m. | Lunch Break  
No outside food may be brought into the Convention Center. |
| 1:15 p.m.–3:15 p.m. | Finalists at Projects for Interviews  
Finalists and Judges only—Professional Attire |
| 3:15 p.m.–4:00 p.m. | Finalists at Projects for Unscheduled Interviews  
Finalists and Special Awards Judges only—Professional Attire |
| 4:00 p.m.–5:00 p.m. | Finalists at Projects for Final Judging Session  
Finalists and Judges only—Professional Attire |
| 5:30 p.m.–Midnight | Intel ISEF Night at Universal Studios Hollywood  
For one night, Universal Studios Hollywood belongs to Intel ISEF. Only Official Party will be admitted to the park. Buses will start departures from the Convention Center at 5:30 p.m. Departures from all of the official Intel ISEF block hotels will begin at 6:00 p.m. Guests will enjoy exclusive access to rides, including the Despicable Me Minion Mayhem,
Shrek 4D, Simpsons, Revenge of the Mummy, and Transformers the Ride 3-D. Studio tours will be running until 9:30 p.m. Attendees will get a coupon for one free game at the Simpson's Carnival Games. Concession stands will be open and will offer a variety of dining options at no charge. Guests are also welcome to visit Universal City Walk, where they will find a number of shopping opportunities as well as restaurants and nightclubs. Universal City Walk is open to the general public and is NOT for the exclusive use of Intel ISEF participants. All activities in Universal City Walk are at the expense of the participant and not Intel ISEF. Transportation back from the park to all block hotels will be continuous throughout the evening until midnight. Temperatures can be cooler at night. Consider bringing a coat/sweatshirt.

**Thursday, May 15**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:00 a.m.–3:00 p.m.</td>
<td>Public Education Outreach Day</td>
<td>Halls J/K</td>
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<td>Open to the general public from 9:00 a.m. – 9:00 p.m.</td>
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<tr>
<td>8:00 a.m.–5:00 p.m.</td>
<td>Intel ISEF Expo 2014</td>
<td>Concourse Hall</td>
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<tr>
<td>8:00 a.m.–6:00 p.m.</td>
<td>The Intel Quad</td>
<td>South Hall Lobby</td>
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<td></td>
<td>Come relax and unwind at the Intel Quad Grab a seat and access the</td>
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<td></td>
<td>wireless internet or connect on a sleek 2in1 device – a laptop and</td>
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<td></td>
<td>tablet in one. Enjoy the open space for collaboration, interact and</td>
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<td></td>
<td>play with a variety of technology-driven re-inspired carnival games,</td>
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<td></td>
<td>take a snapshot in the photo booth, meet Jimmy the Robot and more!</td>
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<tr>
<td>9:00 a.m.–3:30 p.m.</td>
<td>Symposia</td>
<td>408-411</td>
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<td>See full schedule on pages 30–37.</td>
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<tr>
<td>10:00 a.m.–2:00 p.m.</td>
<td>All Finalists Required at Projects</td>
<td>Halls J/K</td>
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<td>Meal vouchers will be provided to Finalists for Lunch.</td>
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<tr>
<td>1:00 p.m.–3:00 p.m.</td>
<td>Advisory Council Meeting</td>
<td>408A</td>
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<tr>
<td>7:00 p.m.–10:00 p.m.</td>
<td>Special Award Ceremony</td>
<td>Halls G/H</td>
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<td><em>(Doors open at 6:30 p.m.)</em>—Professional Attire</td>
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<td>Ceremony in which Special Award Organizations, academic institutions</td>
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<td>and government agencies give awards.</td>
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**Friday, May 16**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 a.m.–11:30 a.m.</td>
<td>Grand Awards Ceremony</td>
<td>Halls G/H</td>
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<td></td>
<td>Sponsored by Intel</td>
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<td></td>
<td><em>(Doors open at 8:30 a.m.)</em>—Professional Attire</td>
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<td></td>
<td>All students are to be seated by 8:45 a.m.</td>
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<td>Awards Ceremony where winners from each category are announced</td>
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<td>as well as the top overall winners for Intel ISEF 2014.</td>
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<td>11:30 a.m.–2:00 p.m.</td>
<td>Exhibit Hall Open for Project Teardown</td>
<td>Halls J/K</td>
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<td>Finalists take down and pack projects for return home.</td>
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<td></td>
<td>Any stored packing material will be at project booth by 11:30 a.m.</td>
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<td>Finalists transporting their own projects will load them upon</td>
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<td>completion of packing. Projects being shipped via UPS or GES/heavy</td>
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<td>freight must be packed and processed for shipping by 2:00 p.m.</td>
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<td>Intel ISEF 2014 nametags required at all times during dismantling.</td>
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<td></td>
<td>No exceptions will be made.</td>
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<tr>
<td>12:30 p.m.–Midnight</td>
<td>Tour to Disneyland</td>
<td>South Hall Lobby</td>
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<td><em>(Not a sponsored event)</em></td>
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<td>Intel ISEF Attendees may register for this tour for a fee at the Tours</td>
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<td>Desk in the South Hall Lobby. This is a great opportunity for those</td>
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<td>staying Friday night to enjoy one of Southern California's premier</td>
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<td>destinations.</td>
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</tbody>
</table>
Symposia sessions are an opportunity to share information with students, parents, teachers and faculty, and do not imply endorsement by Society for Science & the Public. No fees have been paid and no endorsement of the sessions is implied.

Monday, May 12

9:15 a.m. – 10:45 a.m. Room: 408B
1 – Talking Science
Jack Franchetti, Jack Franchetti Communications, Manhasset, NY
A communications specialist teaches guiding principles and techniques to convey the science of your project in lay terms. Students consider this program helpful with the judging process, media interviews, and conversing with the public about their project.
Type: Presentation Audience: Fair Directors, Teachers & Students

9:15 a.m. – 10:15 a.m. Room: 409AB
2 – From Idea to Innovation: Helping Your Students Take Their Research to the Next Level
Nina Vasan, Intel ISEF 2002 Young Scientist Award Winner; Co-author of #1 Amazon Best Seller “Do Good Well”; Stanford University Hospital, San Francisco, CA
Divya Srinivasan, Intel Science Talent Search 2009 Semifinalist; Contributing-author of “Do Good Well”
This interactive workshop from Intel alumni will give educators a framework and curriculum for choosing and executing research projects with social impact.
Type: Workshop Audience: Teachers

9:15 a.m. – 10:15 a.m. Room: 410
3 – Core Discoveries Beneath the Sea!
Sharon Cooper, Consortium for Ocean Leadership, Washington, DC
Come learn how scientific ocean drilling has informed our understanding of Earth’s past, and how this can help us learn about Earth’s present and even its future.
Type: Presentation Audience: Fair Directors & Teachers

10:45 a.m. – 11:45 a.m. Room: 409AB
4 – Turning Idealism into Impact: Taking Your Research to the Next Level
Nina Vasan, Intel ISEF 2002 Young Scientist Award Winner; Co-author of #1 Amazon Best Seller “Do Good Well”; Stanford University Hospital, San Francisco, CA
Divya Srinivasan, Intel Science Talent Search 2009 Semifinalist; Contributing-author of “Do Good Well”
The interactive workshop from Intel alumni will help you turn your idea into a start-up social enterprise or non-profit that is effective, collaborative, and sustainable.
Type: Workshop Audience: Students

10:45 a.m. – 11:45 a.m. Room: 410
5 – Expanding the Base
Victor Hall, Outreach, SSP, Washington, DC
A panel discussion on broadening the base of students participating in science fairs and research to include students that are traditionally underrepresented and/or underserved in STEM education.
Type: Panel Discussion Audience: Fair Directors & Teachers

12:45 p.m. – 2:15 p.m. Room: 408B
6 – Talking Science
Jack Franchetti, Jack Franchetti Communications, Manhasset, NY
A communications specialist teaches guiding principles and techniques to convey the science of your project in lay terms. Students consider this program helpful with the judging process, media interviews, and conversing with the public about their project.
Type: Presentation Audience: Fair Directors, Teachers & Students
2014 INTEL ISEF
LOS ANGELES, CALIFORNIA

APPAREL

Purchase your Intel ISEF mementos and merchandise at the retail store

STORE HOURS:
Saturday: 3:00 p.m. - 6:00 p.m.
Sunday - Monday: 8:00 a.m. - 7:00 p.m.
Tuesday - Wednesday: 8:00 a.m. - 6:00 p.m.
Thursday 8:00 a.m. - 7:00 p.m.
Friday 8:00 a.m. - 2:00 p.m.

APPAREL PROVIDED BY:

GRAPHIC CONNECTION
custom apparel

1-888-821-2725
www.gcsporrtswear.com
12:45 p.m. – 2:15 p.m.  Room: 410
7 – SparkFun in the Classroom with Galileo (Arduino)
Derek Runberg, Curriculum Curator, SparkFun Electronics, Boulder, CO
This workshop will feature guided activities around programming, Arduino (Galileo), processing and data collection in the classroom. **Limited capacity.**
Type: Workshop  Audience: Teachers

1:00 p.m. – 2:00 p.m.  Room: 409AB
8 – Hazards from Space: Space Debris and Asteroids
Nahum Melamed, The Aerospace Corporation, El Segundo, CA
Hold real space debris and meteorites in your hands, and deflect asteroids with an interactive physics-based simulator developed for NASA by The Aerospace Corporation.
Type: Presentation  Audience: Teachers & Students

2:15 p.m. – 2:45 p.m.  Room: 411
9 – Designing the Future – Science Fiction and Robots
Brian David Johnson, Futurist, Intel Corporation
Science fiction stories, comics, and movies are powerful tools to imagine what you want to build. We can use science fiction based on science fact to design robots and then share those stores as a technical requirements document. Come and see how an imagined narrative became a 21st century robot. Learn how you can imagine and then build a different future.
Type: Demonstration & Presentation  Audience: Students

2:30 p.m. – 4:00 p.m.  Room: 410
10 – SparkFun in Your Learning with Galileo (Arduino)
Derek Runberg, Curriculum Curator, SparkFun Electronics, Boulder, CO
This “Code mixer” workshop will feature stationed, self-guided activities around programming, Arduino (Galileo), processing and data. **Limited capacity.**
Type: Workshop  Audience: Students

2:45 p.m. – 3:45 p.m.  Room: 408B
11 – Intel ISEF Judging
Robert Yost, Intel ISEF Judging Ombudsman
Christopher Gould, Chair of Judging, Intel ISEF 2014 Los Angeles
Join us for a question-and-answer session about judging at Intel ISEF. Dr. Yost will explain his role 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 13**

9:00 a.m. – 10:00 a.m.  Room: 411
12 – Science News Magazine Interviews Nobel Laureate John Mather
Eva Emerson, Editor-in-Chief, Science News, SSP, Washington, DC
Dr. John Mather, Astrophysicist and Cosmologist, NASA Goddard Space Flight Center, Greenbelt, MD.
Science News’ Eva Emerson speaks with John Mather, who shared the 2006 Nobel Prize in Physics for his measurement of the radiation left over from the Big Bang, about his work, life and where he thinks the next big discoveries in cosmology will arise. Mather’s work with the COBE satellite to measure the cosmic microwave background helped to confirm the Big Bang theory. He is now a senior project scientist with the James Webb Space Telescope, which is scheduled to launch in 2018.
Type: Panel Discussion  Audience: Fair Directors, Teachers & Students
9:00 a.m. – 10:00 a.m. Room: 409AB
**13 – Statistics and Data Science: Design, Significance, and Modeling in Context**
Dr. Tom Short, John Carroll University, University Heights, OH
Traditional Statistics and Data Science provide structure and language for scientific inquiry. We'll discuss examples from some of the varied dialects of quantitative research methodologies.
Type: Workshop Audience: Fair Directors, Teachers & Students

9:00 a.m. – 10:30 a.m. Room: 410
**14 – SparkFun in the Classroom with Galileo (Arduino)**
Derek Runberg, Curriculum Curator, SparkFun Electronics, Boulder, CO
This workshop will feature guided activities around programming, Arduino (Galileo), processing and data collection in the classroom. **Limited capacity.**
Type: Workshop Audience: Teachers

9:00 a.m. – 10:30 a.m. Room: 410
**15 – So You Want to Write about Science on the Internet?**
A science blog is a great way to learn about your favorite subject and practice your writing skills. This session can help you get started.
Type: Presentation Audience: Teachers & Students

10:30 a.m. – 11:00 a.m. Room: 409AB
**16 – Protect Your Intellectual Property Today: Patents, Trademarks, Copyrights and Trade Secrets**
Dr. Jorge Valdes, U.S. Patent and Trademark Office, Alexandria, VA
Learn about intellectual property and how patents, trademarks, copyrights and trade secrets are essential tools to help you protect your work while creating value in the innovation process.
Type: Presentation Audience: Fair Directors, Teachers & Students

10:30 a.m. – 11:30 a.m. Room: 411
**17 – Talking Science**
Jack Franchetti, Jack Franchetti Communications, Manhasset, NY
A communications specialist teaches guiding principles and techniques to convey the science of your project in lay terms. Students consider this program helpful with the judging process, media interviews, and conversing with the public about their project.
Type: Presentation Audience: Fair Directors, Teachers & Students

10:45 a.m. – 12:15 p.m. Room: 410
**18 – SparkFun in Your Learning with Galileo (Arduino)**
Derek Runberg, Curriculum Curator, SparkFun Electronics, Boulder, CO
This “Code mixer” workshop will feature stationed, self-guided activities around programming, Arduino (Galileo), processing and data. **Limited capacity.**
Type: Workshop Audience: Students

11:15 a.m. – 11:45 a.m. Room: 409AB
**19 – Finding Science and Scientists on the Internet**
The Internet is a great place to find good information and real life scientists. Here’s how.
Type: Presentation Audience: Teachers & Students

12:45 p.m. – 1:45 p.m. Room: 411
**20 – Admit Me!**
Jamilla Jamison, Harvey Mudd College, Assistant Director of Admission, Claremont, CA
Lauren Avalos, MIT, Associate Director of Admission, Cambridge, MA
How to Use Your Research in the College Admissions Process
Type: Presentation Audience: Teachers & Students
12:45 p.m. – 1:45 p.m. Room: 409AB
21 – Where Tweens, Teens and their Teachers can Find Digestible Science
Janet Raloff, Senior Editor, Science News for Students, SSP, Washington, DC
Teachers think Science News for Students is a homework-helper. Teens soon realize it's so much more: fun, informative and full of surprises.
Type: Presentation Audience: Teachers & Students

1:00 p.m. – 2:00 p.m. Room: 406AB (Finalist Resource Center)
22 – Intel Science Talent Search – Application Season Kickstart
Caitlin Sullivan, Program Manager, Intel Science Talent Search, SSP, Washington, DC
Participants work independently on the application, meet alumni, chat with the program manager, and give feedback. Limited number of computers available for use.
(Intel STS is a US only program.)
Type: Workshop Audience: Fair Directors, Teachers & Students

4:15 p.m. – 4:45 p.m. Room: 410
23 – Come and Get It! Free and Open Data for Science
Jeanne Holm, NASA, Jet Propulsion Laboratory, Pasadena, CA
Learn to find, gather, manage, and use open data from the U.S. government (Data.gov) and other organizations. This workshop will help you identify the data you need, gather it together and organize it, and demonstrate tools for mapping, visualizing, and analyzing that data.
Type: Demonstration Audience: Fair Directors, Teachers & Students

4:15 p.m. – 5:15 p.m. Room: 411
24 – Laser, Fire, and Robots! Igniting Interest in STEAM
Brent Bushnell, CEO, Two Bit Circus, Los Angeles, CA
What if we could leverage kids' interest in games, fashion, and music to engage them in more math and science? Introducing STEAM Carnival, an entertainment showcase that combines hands-on social games with project-based learning to inspire kids of all ages to pursue STEAM: science, technology, engineering, art and math.
Type: Presentation Audience: Fair Directors, Teachers & Students

4:15 p.m. – 5:15 p.m. Room: 409AB
25 – Intel Science Talent Search Rules and Judging Overview
Caitlin Sullivan, Program Manager, Intel Science Talent Search, SSP, Washington, DC
A summary of the Intel STS competition and a general overview of eligibility, rules, and the judging process.
Type: Presentation Audience: Teachers & Students

Wednesday, May 14

9:00 a.m. – 9:30 a.m. Room: 410
26 – Student-Generated Research and Science Teacher Preparation
Warren Bernard, Holy Cross School, New Orleans, LA
While science standards call for long-term research projects, science teacher preparation programs do not equip teachers to handle this aspect of teaching science.
Type: Presentation Audience: Fair Directors & Teachers

10:00 a.m. – 11:30 a.m. Room: 408B
27 – SRC — 2015 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 2015 Rules and Guidelines. After the presentation, there will be a Q & A period.
Type: Presentation Audience: Fair Directors & Teachers
Symposium Schedule

11:15 a.m. – 11:45 a.m.                  Room: 410
28 -Providing a STEM Enrichment and Enhancement Programme for Students Aged 5 to 19 Years
Bill Connor and Gerald Hughes, Sentinus, Lisburn, Northern Ireland
This presentation outlines how the STEM Enrichment and Enhancement Model works very successfully in Northern Ireland.
Type: Demonstration
Audience: Fair Directors & Teachers

1:00 p.m. – 2:00 p.m.                  Room: 410
29 – Craft Your Own Fair Management Plan
Rosalie A. Richards, Ph.D.
Leave this workshop with your management plan aligned with SSP's Standards for Science Fairs; clear goals, mapped activities, governance and finance structures, and relevant assessments.
Type: Workshop
Audience: Fair Directors & Teachers

1:15 p.m. – 2:15 p.m.                  Room: 408B
30 – 2015 Intel ISEF Display & Safety Rules and Revisions
Henry Hartman, Intel ISEF Display & Safety Chair
Join the Display & Safety Committee to discuss violations they encountered this year as well as changes to the rules and guidelines for 2015. 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.                  Room: 409AB
31 – SmartAmerica Challenge and Cyber-Physical Systems
Sokwoo Rhee and Geoff Mulligan, Presidential Innovation Fellows, Office of Science and Technology Policy of the White House and National Institute for Standards and Technology
Cyber-Physical Systems add the ability for the Internet of Things to touch and control the physical world, not just sense it. The SmartAmerica Challenge is a White House project to demonstrate the technology and power of Cyber-Physical Systems (CPS) to benefit the lives of Americans.
Type: Presentation
Audience: Fair Directors, Teachers & Students

Talking Science
A Communications Symposium for Intel ISEF 2014 Finalists provided by Intel Corporation
Led 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 — Los Angeles Convention Center

Monday, May 12
9:15 a.m.–10:45 a.m.       408B
12:45 p.m.–2:15 p.m.       408B

Tuesday, May 13
10:30 a.m.–Noon           408B
2:30 p.m. – 4:00 p.m.  Room: 410
32 – Intel ISEF 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 session is limited to 20 participants who are members of local or regional SRCs. Register in the SRC room before May 14 to attend.  
Type: Workshop  
Audience: Members of a local or regional SRC

Thursday, May 15

8:45 a.m. – 9:45 a.m.  Room: 409AB
33 – Protect Your Intellectual Property Today: Patents, Trademarks, Copyrights and Trade Secrets  
Dr. Jorge Valdes, U.S. Patent and Trademark Office, Alexandria, VA  
Learn about intellectual property and how patents, trademarks, copyrights and trade secrets are essential tools to help you protect your work while creating value in the innovation process.  
Type: Presentation  
Audience: Fair Directors, Teachers & Students

9:00 a.m. – 9:30 a.m.  Room: 410
34 – Why Science Needs Everyone?  
Christa Hasenkopf, U.S. Agency for International Development, Washington, DC  
Come explore mind-blowing ways that science has improved the human condition and why we need to connect everyone to the world’s brainpower grid to keep improving!  
Type: Presentation  
Audience: Fair Directors, Teachers & Students

10:30 a.m. – 11:30 a.m.  Room: 408B
35 – Intel ISEF Scientific Review Committee – Human Participants Rules and Guidelines  
Nancy Aiello, Intel ISEF SRC Chair  
Meet with members of the Intel ISEF Scientific Review Committee to review the rules and guidelines related to the use of human participants with time for questions and answers.  
Type: Panel Discussion  
Audience: Fair Directors & Teachers

10:30 a.m. – 11:30 a.m.  Room: 410
36 – A Strategy for Solving Open-Ended Problems  
Dr. David Zietlow, Bradley University, Peoria, IL  
A structured approach to solving open-ended problems starting with the objective and working your way back to the inputs required to solve the problem.  
Type: Presentation  
Audience: Teachers & Students

1:00 p.m. – 2:00 p.m.  Room: 410
37 – Broadcom MASTERS: SSP’s National Middle School Science Competition  
Allie Hewlett Stifel, Program Manager, Broadcom MASTERS, SSP, Washington, DC  
An overview of SSP’s Broadcom MASTERS competition for middle school students. Learn about the application process, eligibility, judging and affiliation, and meet Broadcom MASTERS finalists.  
Type: Presentation  
Audience: Fair Directors & Teachers

2:15 p.m. – 3:15 p.m.  Room: 411
38 – Admissions 101: Pursuing Science and Engineering at Highly Selective Universities  
Alexandra Largess, Columbia University in the City of New York, NY  
Learn about academic opportunities and extracurricular life for undergraduates studying engineering and applied sciences at Columbia University in New York City.  
Type: Presentation  
Audience: Teachers & Students
39 – So, You Want to be an Astronaut?  
Mark Stucky, Engineering Test Pilot, Scaled Composites, LLC  
Engineering Test Pilot Mark Stucky relates his experiences from hang gliding at age 15 to expanding the supersonic envelope of this unique space plane.  
Type: Presentation  
Audience: Fair Directors, Teachers & Students

2:30 p.m. – 3:00 p.m.  
40 – 4-H and STEM: Imagine the Possibilities and Seize the Opportunities  
Lori Barbeau, Florida Junior Academy of Science, Port St. Lucie, FL  
4-H is a national organization focused on youth development. Combining science competitions with 4-H opens up a world of possibilities for students.  
Type: Presentation  
Audience: Fair Directors, Teachers & Students

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**EPA SCIENCE**

- 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!**

Follow us on Twitter: @EPAresearch  
Learn more about our work: www.epa.gov/research
Los Angeles Restaurants

Back Porch 333 S. Figueroa St. (213) 617-6090
Bonaventure Brewing Co. @ Westin 404 S. Figueroa St., #418A (213) 238-0802
Bottle Rock—Downtown LA 1050 Flower St. (213) 747-1100
The Brasserie @ Sheraton Downtown 711 S. Hope St. (213) 488-3500
Bugis St. Brasserie @ Millennium Biltmore 560 S. Grand Ave. (213) 624-1100
Café Pinot 700 W. Fifth St. (213) 239-6500
California Pizza Kitchen 735 S. Figueroa St. (213) 228-8500
Chaya Downtown 525 S. Flower St. (213) 236-9577
Corner Bakery Cafe 801 S. Figueroa St. (213) 239-0424
Courtyard Bistro – Beverly Hills 10320 W. Olympic Blvd. (310) 556-2777
Daily Grill – Downtown 612 S. Flower St. (213) 622-4500
Drago Centro 525 S. Flower St., #120 (213) 228-8998
Engine Co. No. 28 644 S. Figueroa St. (213) 624-6996
Faith & Flower 705 W. 9th St. (213) 239-0642
Famous Players @ LA Athletic Club 431 W. 7th St. (213) 625-2211
The Farm of Beverly Hills @ LA LIVE 800 W. Olympic Blvd. (213) 747-4555
First & Hope 710 W. First St. (213) 617-8555
Fleming's Prime Steakhouse @ LA LIVE 800 W. Olympic Blvd. (213) 745-9911
Grand Cafe 251 S. Olive St. (213) 617-3300
The Grill Room 431 W. Seventh St. (213) 625-2211
Illy Espressamente @ JW Marriott LA LIVE 900 W. Olympic Blvd. (213) 765-8600
Katsuya @ LA LIVE 800 W. Olympic Blvd. (213) 747-9797
Kendall's Brasserie & Bar 135 N. Grand Ave. (213) 972-7322
LA Market @ JW Marriott LA LIVE 900 W. Olympic Blvd. (213) 765-8600
Lakeview Bistro 404 S. Figueroa St. (213) 624-1000
Lawry's Carvery @ LA LIVE 1011 S. Figueroa St., B115 (213) 763-5441
Live Basil @ LA LIVE 800 W. Olympic Blvd. (213) 746-5483
McKay's 3540 S. Figueroa St. (213) 748-4141
Nest at WP24 @ JW Marriott LA LIVE 900 W. Olympic Blvd. (213) 743-8824
New Zealand Natural Ice Cream (L.A. Live) 1011 S. Figueroa St. (213) 763-5441
The Original Pantry Cafe 877 S. Figueroa St. (213) 972-9279
Patina 141 S. Grand Ave. (213) 972-3331
Pete's Cafe & Bar 400 S. Main St. (213) 617-1000
Philippe The Original 1001 N. Alameda St. (213) 628-3781
Plum Tree Inn 913 N. Broadway (213) 613-1819
Red Mango @ LA LIVE 800 W. Olympic Blvd. (213) 746-2646
The Restaurant @ The Standard 550 S. Flower St. (213) 439-3030
Stafford + Mathis @ Luxe City Center 1020 S. Figueroa St. (213) 748-1291
Rock’N Fish @ LA LIVE 800 W. Olympic Blvd. (213) 748-4020
Rosa Mexicano @ LA LIVE 800 W. Olympic Blvd. (213) 746-0001
Rosso's Pizzeria 3500 S. Figueroa St. (213) 748-4141
Smashburger 800 W. Olympic Blvd. (213) 631-3355
Starbucks @ LA Live 800 W. Olympic Blvd. (213) 783-5441
Tom's Urban 800 W. Olympic Blvd. (213) 746-8667
Wokcano—Downtown 800 W. Seventh St. (213) 623-2288
Wolfgang Puck Bar & Grill @ LA LIVE 800 W. Olympic Blvd. (213) 748-9700
WP24 @ JW Marriott LA LIVE 900 W. Olympic Blvd. (213) 743-8800
Yard House @ LA LIVE 800 W. Olympic Blvd. (213) 763-5441
### Locations of Noted Attractions

<table>
<thead>
<tr>
<th>Attraction</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Science Center</td>
<td>700 Exposition Park Dr.</td>
<td>(323) 724-3623</td>
</tr>
<tr>
<td>Grammy Museum</td>
<td>800 W. Olympic Blvd.</td>
<td>(213) 765-6800</td>
</tr>
<tr>
<td>Griffith Observatory</td>
<td>2800 E. Observatory Rd.</td>
<td>(213) 473-0800</td>
</tr>
<tr>
<td>La Brea Tar Pits</td>
<td>5801 Wilshire Blvd.</td>
<td>(323) 934-7243</td>
</tr>
<tr>
<td>NASA Jet Propulsion Laboratory</td>
<td>4800 Oak Grove Drive, Pasadena</td>
<td>(818) 354-4321</td>
</tr>
<tr>
<td>Natural History Museum</td>
<td>900 Exposition Blvd.</td>
<td>(213) 763-DINO</td>
</tr>
<tr>
<td>Olvera Street</td>
<td>Main Street/Cesar Chavez Blvd.</td>
<td>(213) 625-7074</td>
</tr>
</tbody>
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### Banks

<table>
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<tr>
<th>Bank</th>
<th>Address</th>
<th>Phone</th>
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</thead>
<tbody>
<tr>
<td>Bank of America</td>
<td>888 7th Street @ Figueroa</td>
<td>(213) 312-9000</td>
</tr>
<tr>
<td>Bank of the West</td>
<td>333 S. Hope Street @ 3rd St.</td>
<td>(213) 912-9000</td>
</tr>
<tr>
<td>Chase Bank</td>
<td>915 Wilshire Blvd. @ Francisco St.</td>
<td>(213) 986-7865</td>
</tr>
<tr>
<td>City National Bank</td>
<td>300 S. Grand Ave. @ Hope Pl.</td>
<td>(213) 972-0200</td>
</tr>
<tr>
<td>US Bank</td>
<td>725 S. Figueroa St. @ 7th St.</td>
<td>(213) 624-1403</td>
</tr>
<tr>
<td>Union Bank</td>
<td>555 S. Flower St. @ 5th St.</td>
<td>(818) 227-4300</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>633 W. 5th Street @ Grand Ave.</td>
<td>(213) 612-6300</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>445 S. Figueroa St. @ 4th St.</td>
<td>(213) 236-7700</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>717 W. Olympic Blvd. @ Figueroa</td>
<td>(213) 688-2680</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>707 Wilshire Blvd. @ Hope St.</td>
<td>(213) 483-2681</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>333 S. Grand Ave. @ 3rd St.</td>
<td>(213) 253-6600</td>
</tr>
</tbody>
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### Copy and Mail Services

<table>
<thead>
<tr>
<th>Service</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>FedEx Office Print and Ship Center</td>
<td>800 Wilshire Blvd. @ 7th St.</td>
<td>(213) 892-1700</td>
</tr>
<tr>
<td>PIP Printing &amp; Marketing Services</td>
<td>404 S. Figueroa St.</td>
<td>(213) 622-2045</td>
</tr>
<tr>
<td>Universal Reprographics</td>
<td>@ Westin Bonaventure</td>
<td></td>
</tr>
<tr>
<td>The UPS Store</td>
<td>700 Wilshire Blvd. @ Hope St.</td>
<td>(213) 489-2333</td>
</tr>
<tr>
<td>US Post Office</td>
<td>2520 W. 6th St., #105</td>
<td>(213) 365-7768</td>
</tr>
<tr>
<td></td>
<td>@ S. Coronado St.</td>
<td></td>
</tr>
</tbody>
</table>

### Drugstores

<table>
<thead>
<tr>
<th>Drugstore</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rite Aid</td>
<td>600 W. 7th St. @ Hope St.</td>
<td>(213) 896-0083</td>
</tr>
<tr>
<td>Walgreens</td>
<td>617 W. 7th St. @ Grand Ave.</td>
<td>(213) 694-2880</td>
</tr>
</tbody>
</table>

### Grocery Stores *Outside food cannot be brought into the LACC*

<table>
<thead>
<tr>
<th>Grocery Store</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Famima</td>
<td>350 S. Grand Ave #2B @ 4th &amp; Olive</td>
<td>(213) 628-4000</td>
</tr>
<tr>
<td></td>
<td>700 Wilshire Blvd. @ Hope St.</td>
<td>(213) 622-2006</td>
</tr>
<tr>
<td></td>
<td>525 W. 6th St. @ Grand Ave.</td>
<td>(213) 629-5100</td>
</tr>
<tr>
<td>Ralphs Grocery Store</td>
<td>645 W. 9th St. @ Flower</td>
<td>(213) 452-0840</td>
</tr>
<tr>
<td>Smart &amp; Final Extra!</td>
<td>845 S. Figueroa St. @ W 8th Place</td>
<td>(213) 629-0039</td>
</tr>
</tbody>
</table>

### Medical/Dental

<table>
<thead>
<tr>
<th>Medical/Dental</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Hospital Medical Center</td>
<td>1401 S. Grand Ave. @ 14th St.</td>
<td>(213) 748-2411</td>
</tr>
<tr>
<td>Good Samaritan Hospital</td>
<td>1225 Wilshire Blvd. @ S. Lucas Ave.</td>
<td>(213) 977-2121</td>
</tr>
<tr>
<td>USC Care Medical Group</td>
<td>1400 S. Grand Ave. @ 14th St.</td>
<td>(213) 744-0801</td>
</tr>
<tr>
<td>Plaza Dental Care</td>
<td>505 S. Flower St. @ 5th St.</td>
<td>(213) 626-6161</td>
</tr>
</tbody>
</table>

### Miscellaneous Stores

<table>
<thead>
<tr>
<th>Miscellaneous Stores</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staples Office Supply</td>
<td>3223 W 6th St. @ S. New Hampshire Ave.</td>
<td>(213) 738-9837</td>
</tr>
<tr>
<td>City Target</td>
<td>735 S. Figueroa St. @ 7th St.</td>
<td>(213) 330-4543</td>
</tr>
<tr>
<td>Macy’s</td>
<td>750 W 7th St. @ Flower St.</td>
<td>(213) 628-9311</td>
</tr>
</tbody>
</table>
Los Angeles Local Arrangements Committee

Society for Science & the Public thanks the dedicated members of the Los Angeles Local Arrangements Committee who have worked hard in preparation for the Intel ISEF 2014:

Leticia Aceret
Manny Aceves
Milena Acosta
Martha Adams
Mitch Aiken
Maureen Allen
JoAnn Apostal
Luis Armenta
Dennis Atkinson
Jocelyn Balaban
Deborah Beckmann-Kotsubei
Jerry Blackburn
Kathy Blackburn
Erika Borg
Eveline Bravo
Norm Brennan
Alex Capecelatro
Jeff Chapman
Linda Chilton
Katharine Clemmer
Geraldine Contreras-Jaimerena
Ashley Cooper
Dena Deck
Jim DePompei
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Clayton Dube
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Renee Klein
David Kobe
Daniel Konopka
Linda LaTendresse
Stephanie Loete
Emily Loughgran
Wisdom Lu
Annie Maben
Sushil Madhogarhia
Shiva Mandell
James Maynard
Monica Maynard
Dionne McClain Matthews
Annette Mendez
Misty Mercier
Maria Elena Miraz
Philip Molebash
Rachel Morford
Joan Morisaki
Esther Nah
Sarah Nickerson
Bob Nidever
Gwen Noda
Tom Nolan
Christina Ochoa-Lopez
Nancy Olson
Dee Patel
Bryan Penprase
Francisco Porras
Clara Potes-Fellow
Jacklin Rad
Bill Radulovich
S.K. Ramesh
Erica Randall
Behzad Razavi
Annie Richardson
Marta Sanchez
Michelle Serrano
Cynthia Sherrill
Henry Shimojyo
Yamileth Shimojyo
Nancy Shrodes
Sheila Simmons
Stacy Sinclair
Steve Stanton
Daniel Tamayo
Anthony Tran
Jilena Trifunovic
Viviana Vallin
Rinaldo Veseliza
Nestor Wagner
Claire Wake
Frank Weeks
Margery Weitkamp
Lyndell Whitley
Oryla Wiedoeft
Staci Wong
David Zielke
Rachel Zimmerman-Brachman
Linda Zukowski
Society for Science & the Public and Intel thank the dedicated Committee members of Intel ISEF 2014:

Scientific Review Committee
- Nancy Aiello, Chair
- Susan Appel
- Henry Disston
- Paula Johnson
- Maria Lavooy
- Chris Miller
- Evelyn Montalvo
- Jason Shuffitt

Intel ISEF SRC Readers
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Long term ISEF D&S Committee Member, Jack D. Johnson, passed away in August 2013; he will be especially remembered to all of us for his love of Intel ISEF. In his home town of Tucson, Arizona, he successfully worked to boost and expand the Southern Arizona’s Research Science & Engineering Fair. He and his tireless enthusiasm for science will be greatly missed.

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Additional Acknowledgements

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Each # next to the finalist’s name indicates previous Intel ISEF participation
T precedes the name of the Teacher-Sponsor of the finalist
* identifies non-competing projects
T after the booth ID number indicates a team project

AMERICAN SAMOA
Pago Pago, TEAS01, American Samoa Science Fair
AS026 An Experimental Study to Determine the Food Preferences of Coconut Crabs (Birgus latro) in Captivity
Liana Daniell e Gurr, 16, Junior, Tafuna High School, Pago Pago, American Samoa,
T: Joserose Jyothibhavan

AS029 The Role of Homalanthus nutans (G. Forst.) Guill., a Samoan Medicinal Plant, as an Insect Growth Regulator
Charu Joserose, 15, Sophomore, Tafuna High School, Pago Pago, American Samoa,
T: Joserose Jyothibhavan

EV051 Escherichia coli Disinfection: Comparing the Effects of Ultraviolet Light and Sodium Hypochlorite
Akash Sivakumar, 16, Senior, South Pacific Academy, Pago Pago, American Samoa,
T: Cecilia Tuionoula

ARGENTINA
La Pampa, ARG001, National Science Fair of Argentina
EM302 Evaluation of Performance and Suggestions for Improvement in Obtaining Prosopis alba Griseb Flour in a Region of Semi-Arid Argentine Chaco
Cristian Efrain Medina, 16, Senior; Mirian Gomez, 17, Senior, Escuela Agrotecnica Provincial No. 10, El Quebracho, Argentina, T: Natalia Elizabeth Beatriz Lupia

AUSTRALIA
Melbourne, AUS003, BHP Billiton Science and Engineering Awards
BE004 The Effects of Texting on Driving Safety
Conroy Cheers, 15, Sophomore, Caulfield Grammar School, Melbourne, Australia,
T: Andrea Nelson

CH003 The Optimal Reclamation Point of Phosphate from a Wastewater Treatment Plant
Lewis Michael Nitschinsk, 17, Senior, Queensland Academies for Health Sciences, Southport, Australia, T: Paul Mitchell

CS003 The PART* Program: Improving Emergency Response Times (Police and Ambulances Regulating Traffic)
Viney Kumar, 15, Sophomore, Knox Grammar School, Sydney, Australia, T: Deborah De Ridder

EE010 Swirlesque: A New Form of Gesture Based Human Computer Interaction
Jake Coppinger, 16, Junior, Gungahlin College, Canberra, Australia, T: Lisa Pluis

ME094 The SMART System: Stroke Management with Augmented Reality Technology
## Ethan Thomas Butson, 18, Junior, The Illawarra Grammar School, Mangerton, Australia,
T: Margaret Dubowski

AUSTRIA
Vienna, AUT001, Vienna International Science and Engineering Fair
CS301 Variable Neighborhood Search for the Partition Graph Coloring Problem
Lorenz Leutgeb, 19, Senior; Moritz Wanzenbock, 19, Senior, Höhere Technische Lehranstalt Wien Ottakring, Vienna, Austria, T: Martin Gruber

EN302 Anastomosis Robot Tool (ART)
Yuki Trippel, 19, Senior; Dominik Kovács, 19, Senior; Thomas Gunther Steinlechner, 20, Senior,
HTBLuVA Mödling, Mödling, Austria, T: Manfred Deubel
ET304  **Width-variable Francis Turbine**  
Maximilian Palir, 19, Senior; Bernhard Ebner, 19, Senior; Herbert Rippl, 19, Senior, Hohere Technische Bundes-Lehr- und Versuchsanstalt Salzburg, Salzburg, Austria;  
T: Franz Landertshamer

AZERBAIJAN  
**Baku, AZR001, Azerbaijan Science and Engineering Fair**

CH004  **New Approach to Synthesis of Glucose-Phosphates and Their Use to Increase the Efficiency of ATP**  
Ayaz Abuzarov, 15, Freshman, “Young Talents” Lyceum, Baku, Azerbaijan,  
T: Valeh Ismailov

EN303  **Green Biosynthesis and Characterization of Magnetic Iron Oxides (Fe$_2$O$_3$, Fe$_3$O$_4$) Nanoparticles Using Pomegranate (Punica Granatum) Aqueous Extract**  
Nargis Allahverdiyeva, 17, Junior; Jamil Imranov, 16, Freshman, Technical-Humanitarian Lyceum No.16, Baku, Azerbaijan, T: Gulnara Khalilova, Gulnara Xalilova

ET305  **Cryogenic Energy Storage**  
Jamil Muradov, 16, Freshman; Lala Jabir Jumshudlu, 16, Freshman; Medina Mursagulova, 16, Junior, Baku European Lyceum, Baku, Azerbaijan, T: Seadat Veysova, Seadat Veysova

BELARUS  
**Minsk, BLR001, BellISEF**

CS004  **Chemistry X10: Educational App with Problem Solver**  
Pavel Batsylev, 17, Junior, School No.3, Starye Dorogi, Starye Dorogi, Belarus,  
T: Alena Rusakovich

ET005  **The Jerusalem Artichoke as a Perspective Renewable Fuel**  
Lizaveta Salokhina, 16, Junior, Gymnasium No. 1, Zhodino, Zhodino, Belarus,  
T: Iryna Pichuhina

MA003  **Continued Fractions and Euclidean Algorithm in Unique Factorization Domains**  
Nikita Kondratyonok, 16, Sophomore, Minsk Gymnasium No.41, Minsk, Belarus,  
T: Maksim Vaskouski

PH002  **Brushless Maglev Engine: Design Improvements, Physical Model, Practical Application**  
Raman Paliakou, 17, Junior, Gymnasium No. 1, Vitebsk, Belarus, T: Alexander Heliasin

BRAZIL  
**Campinas, BRA003, Escola Americana De Campinas**

EM011  **Responsible (at Home) Recycling of Disposable Diapers**  
Salvador Alvarado, 17, Junior, Escola Americana de Campinas, Campinas, Brazil,  
T: Mauricio Fernando Gozzi

EN026  **Second Generation Bioethanol: Opportunity to Decrease Production Cost**  
Guilherme Molina Pinto, 17, Junior, Escola Americana de Campinas, Campinas, Brazil,  
T: Mauricio Fernando Gozzi

EN315  **Manipulation of Live MCS Incorporating Hydroxyapatite as a Regenerative Bioscaffold**  
Angelica Andrade Bourland, 16, Junior; Charles Rice Bourland, IV, 15, Freshman, Escola Americana de Campinas, Campinas, Brazil, T: Mauricio Fernando Gouzzi

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

BE305  **Group Phyllos: Student Choir as an Instrument of Cultural Inclusion**  
Mateus De Sousa Nogueira, 16, Sophomore; Lorena Sampaio Nascimento, 17, Sophomore, Escola Estadual de Educacao Profissional Julia Giffoni, Fortaleza, Brazil, T: Jose Wellington Leite Teofiló

BI005  **L-Asparaginase Production from Kefir: An Alternative for the Treatment of Acute Limphoblastic Leukemia**  
Barbara Carolina Federhen, 19, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brazil, T: Carla Kereski Ruschel

EE302  **ECO Brise: Comfort and Energy Efficiency for Ambiences**  
Joata Kesley Oliveira, 17, Junior; Caio Celso de Araujo, 18, Junior; Allyson Franklin Marinheiro Borges, 17, Junior, IFRN Campus Natal Zona Norte, Natal, Brazil, T: Marcus Vinicius Araujo Fernandes

EE305  **CORPOS: Orthopedic Posture Corrector**  
Murilo Machado Pinto, 18, Senior; Lucas Raupp Hans, 18, Freshman; Lucas Henz Garcia, 18, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brazil, T: Marco Cesar Sauer
EE306  SIMDEV: Visually Impaired Home Monitoring System
Lucas Manique Leal, 19, Senior; Leonardo Gabriel Da Paz, 18, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brazil, T: Andre Lawisch

ME008  Correlation between Histology of Collagen Fiber and Muscle Strength in Athletes with Joint Hypermobility
Tatiana Ciocler Trahtenberg, 16, Junior, Escola Antonietta e Leon Feffer, Sao Paulo, Brazil, T: Marcio Rossi Marcio

MI003  Mitochondria: Different Adaptation to Grow Conditions with Possible Implications to Infectivity
Barbara Cohen, 17, Senior, Escola Antonieta e Leon Feffer, Sao Paulo, Brazil, T: Renata Carmona e Ferreira

PH009  Star Tracker: A Computational Framework to Locate Celestial Bodies
Leonardo Vasconcelos Lopes, 19, Senior, Instituto Federal de Educacao, Ciencia e Tecnologia de Mato Grosso do Sul, Nova Andradina, Brazil, T: Rodrigo Silva Duran

PS303  Application of the Biotechnological Plant Nim (Azadirachta indica) in the Combat of the Parasites of Plants and Animals
Savio Henrique Da Silva, 17, Junior; Dayana Stefane De Sousa Silva, 17, Sophomore; Caroline Alcantara De Sousa Cirino, 16, Junior, Escola Estadual Manoel Antonio de Sousa, Azurita-Mateus Leme, Brazil; Manoel Antonio de Sousa, Azurita-Mateus Leme, Brazil, T: Jose Antonio Lopes de Sousa

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

BI311  Low Cost Extraction and Pre-Purification of Bromelain Derived from Crota (Neoglaziovia variegata) by High Performance Liquid Chromatography: An Effective Antibacterial and Antifungal Alternative?
Francisco Mairton Lima, 16, Sophomore; Francisco Daniel Adriano, 16, Sophomore, Escola Estadual de Educacao Profissional Julio Franca, Bela Cruz, Brazil, T: Fernando Nunes de Vasconcelos

CB032  Transformation of XPV Cells by E6 and E7 Genes of HPV Sensitizes the Cells to UVB Light: Synthetic Lethality and Perspectives to the Treatment of Cervical Cancer
Eduardo Padilha Antonio, 16, Junior, Centro Universitario Adventista de Sao Paulo - UNASP-SP, Sao Paulo, Brazil, T: Veridiana Munford

CB304  Improvement of Techniques to in vitro Cultivate and Differentiate Stem Cells from Breast Milk
Maite Campos Correa Mascarenha, 18, Senior; Luiza Maira Ribeiro Da Silva, 18, Senior; Maira Ferreira Lopes, 18, Senior, Instituto Federal de Educacao, Ciencia e Tecnologia do Rio de Janeiro, Rio de Janeiro, Brazil, T: Sheila Albert dos Reis

CH026  Preparation of Surfactants Mixture from Cashew Nut Shell Liquid and Castor Oil to Combat the Dengue Mosquito Larvae, Phase Two
Gabrielle Tiago Galdino, 18, Senior, Nova Escola, Campo Grande, Brazil, T: Adilson Beatriz

#  EM318  Recycling Sytrofoam® to Make Waterproofing Resin, Phase II
Jaqueline Alves Pereira Da Silva, 18, Senior; Lucas Gustavo Pelinson, 18, Senior; Gisele Cavalcante Dos Reis, 18, Senior, Etec de Ribeirao Pires, Ribeirao Pires, Brazil, T: Carlos Eduardo Andrade Barreiro

EN036  Human Skin Equivalent for Transplants and Pharmacologicals Tests
Angela Ferreira De Oliveira, 17, Sophomore, ETEC Professor Carmelino Correia Junior, Franca, Brazil, T: Joana D'arc Felix de Sousa

EN320  FISA: Film for Selective Absorption
Raissa Muller, 18, Senior; Gabrielle Chiomento Da Motta, 18, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brazil, T: Schana Andreia da Silva

EV310  Identification of Bioindicator Organisms in the Parana Coast through Correlation between Biotic and Abiotic Factors, Year III
Nayara Martins Orsi, 17, Senior; Flavia Carolina Faggiao, 17, Senior, Colegio Interativa de Londrina, Londrina, Brazil, T: Fabio Luiz Ferreira Bruschi

PS312  Anticarcinogenic Potential of Nutraceutical Supplement Soybean Based Quantified with High Rates of Genistein and Daidzein
Rayane Dayara De Souza Melo, 18, Junior; Carla Fernanda Okabe, 17, Junior, Instituto Federal de Educacao, Ciencia e Tecnologia de Mato Grosso do Sul, Coxim, Brazil, T: Angela Kwiatkowski
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<th>Project Title</th>
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<td>BULGARIA</td>
<td>Sofia</td>
<td>Sofia High School of Mathematics, Sofia</td>
<td>On the Lower Central Series of PI-algebras</td>
<td>Rumen Rumenov Dangovski</td>
<td>Senior</td>
<td>T: Pavel Etingof</td>
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<tr>
<td>BULGARIA</td>
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<td>Covering Squares of Side Length $n+\mu$ with Unit Squares</td>
<td>Rayna Dimchova Gadzheva</td>
<td>Junior</td>
<td>T: Konstantin Velichkov</td>
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<td>CANADA</td>
<td>Canada</td>
<td>St. George's School, Vancouver</td>
<td>Nanofluid CPU Cooling: Novel Block Design</td>
<td>Duncan Bayard Stothers</td>
<td>Junior</td>
<td>T: Wallace MacKay</td>
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<td>CANADA</td>
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<td>Lisgar Collegiate Institute, Ottawa</td>
<td>Production of a Viral Enhancer Protein Using a Bacterial Platform</td>
<td>Adano Young</td>
<td>Senior</td>
<td>T: David Wright</td>
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<td>CANADA</td>
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<td>Private Language School Erich Kaestner, Sofia</td>
<td>Computer Enhanced Analysis of Images from Immunohistochemistry</td>
<td>Lyubomir Lyubchov Yanchev</td>
<td>Senior</td>
<td>T: Zheko Naychov</td>
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<td>CANADA</td>
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<td>Walkerville Collegiate Institute, Windsor</td>
<td>Fun in the Sun! Increasing Grätzel Cell Efficiency Using Diatomaceous Earth</td>
<td>Meagan Ann Faber</td>
<td>Senior</td>
<td>T: Michelle Fabel</td>
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<tr>
<td>CANADA</td>
<td>Hamilton</td>
<td>Colonel By Secondary School, Ottawa</td>
<td>Identification of Novel Broad-Spectrum Antimicrobial Compounds in Curcuma amada</td>
<td>Varsha Jayasankar</td>
<td>Senior</td>
<td>T: Darren Yip</td>
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<tr>
<td>CANADA</td>
<td>Hamilton</td>
<td>Ancaster High School, Ancaster</td>
<td>The Diagnostic Potential of Brain Derived Neurotrophic Factor in Mild to Moderate Depression</td>
<td>Arjuna Sathyadeep Maharaj</td>
<td>Senior</td>
<td>T: Reginald Varghese</td>
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</table>
Montreal, CAN004, Montreal Regional Science and Technology Fair

EM021  The Sustainable Cube
Wilfred Aldo Mason, 15, Freshman, Laurier Senior High School, Laval, Canada,
T: Noura Helal

EM027  Don't Cry Over Spilled Oil!
Nivatha Balendra, 18, Senior, Marianopolis College, Westmount, Canada, T: Rocco Iafigliola

ME065  INGAP Circles around Diabetes
Alexandra Cohen, 16, Junior, St. George's School of Montreal, Montreal, Canada,
T: Jennifer Hunter

CHILE
Santiago, CHL001, EXPLORA National Youth Science Conference
BI301  Kefirada Milk 2.0: An Organic Alternative to Dairy Product as a Functional Food
Katherine Astrid Araya Berrios, 15, Freshman; Javiera Francisca Salinas Contreras, 15,
Freshman, Leonardo da Vinci, Coquimbo, Chile, T: Norys Andrea Villarroel

EM030  Singing in the Shower...Recovering Water
Fabian Ignacio Lopez Caceres, 17, Sophomore; Alicia Francisca Barrios- Cordova, 17,
Sophomore, San Agustin de Atacama, Copiapó, Chile, T: Ana del Carmen Garcia

CHINA
All of China, CHN001, China Adolescents Science and Technology Invention Contest
CH011  A Study of Preparation of Fire-Retardant Exterior Wall Thermal Insulating Foam with a
New Type of Raw Material
Qiaochu Wang, 16, Sophomore, Zhengzhou No.1 High School, Zhengzhou, China,
T: Guopeng Shen

CS016  A New Optical Computing Method with Combination of Colored Lights Realizing Balanced
Ternary Computation
Yue Yao, 16, Junior, High School Affiliated to Shanghai Jiao Tong University, JiaDing Campus,
Shanghai, China, T: Yu Peng

EA003  The "Wisdom" of the Ancient Insects
Tong Fu, 16, Sophomore, The High School Affiliated to Renmin University of China, Beijing,
China, T: Dong Ren

EA301  The Oldest Coast Redwoods from the Middle Jurassic of North China and
Its Environmental Significance
Xiwei Ma, 15, Sophomore; Zhongtian Qiao, 16, Sophomore, The Experimental High School
Attached to Beijing Normal University, Beijing, China, T: Yongyun Gang

EE020  The Design of Plate Fan Based on Photo Sensor
# Diming Xu, 19, Senior, Nanjing Jinling High School, Nanjing, China, T: Qijun Zhang

EE021  Parking Space Search and Vehicle Guidance Technology in Parking Lots with Quadrotor
Unmanned Aerial Vehicle
Jiayan Chen, 17, Senior, Shanghai High School, Xuhui District, China, T: Xinyi Yang

EE022  Anti-Rain Storm Traffic Risk Detecting, Revealing & Wireless Messaging System
Donglin Yang, 15, Sophomore, Beijing No.80 High School, Beijing, China, T: Yuhong Chen

EE023  The Optical Imaging Remote Sensor that Captures Objects' Changing Movement
Junxi Zheng, 16, Sophomore, Taizhou No. 1 High School, Taizhou, China, T: Nengxiao Lu

EE311  Printable Anti-Tampering and Security E-Tag
Yansangni Luo, 17, Junior; Ruihan Yang, 18, Freshman; Yujie Ren, 17, Junior, Chengdu No. 7
High School, Si Chuan Chengdu, China; Chengdu No.7 High School, Chengdu, China,
T: Yukun Zhang

EM007  Why Did Water Strider Mysteriously Disappear from Rural Ponds?
Xidian Zhang, 18, Senior, No.1 Senior Middle School Puyang, Puyang City, China, T: Mei Xie

EM008  Recovery of Valuable Ni from Electroplate Nickel Slag by Bioleaching
Qi Xin, 17, Senior, The High School Affiliated to Renmin University of China, Beijing, China,
T: Dan Wan

EN307  Microwave Sintering of SiC Ceramic Rollers for Roller Kiln
Wenbao Liu, 16, Junior; Jingwei Zhang, 17, Senior; Xiaoying Li, 16, Junior, Henan Experimental
High School, Zhengzhou, China; Zhengzhou Foreign Language School, Zhengzhou, China,
T: Bingbing Fan, Lin Li
EV012 The Important Discovery of a Greenhouse Gas “Bio-Catcher”: Carbon Fixation in Trentepohlia
Yiyang Lu, 17, Junior, No. 1 Middle School Affiliated to Huazhong Normal University, Wuhan, China, T: Weijia Wang

EV013 Absorption and Mechanism of Peperomia (*Peperomia tetraphylla*) to Automobile Exhaust
Luqing Qi, 17, Junior, Beijing 101 Middle School, Beijing, China, T: Lixia Ma

MA010 A New Method to Determine the Properties of Solutions to One-Variable Cubic Equations with Integral Coefficients
Boli Fang, 18, Senior, Chengdu YuLin High School, Chengdu, China, T: Yan Jiang

MI012 Investigate the Cause and Control of Black Mold on Bamboo Chopsticks
Chengxun Ni, 14, Freshman, Nankai Xiangyu Middle School, Tianjin, China, T: Xi Meng

MI014 The Comparison of Bacterial Compositions on Seven Kinds of Fermented Tofu by High-throughput Sequencing
Linyi Jin, 15, Junior, Shanghai Qibao High School, Shanghai, China, T: Jun Gao

PH014 Research and Development of High-Efficient Non-Strobe Flash Electronic Ballast for Fluorescent Light
Yanheng Xu, 16, Junior, Tongan No.1 Middle School, Xiamen, China, T: LiangXi Kang

PH015 “Curie Point” Demonstration Device: New Magnetic Generator
Lingxuan Zeng, 16, Junior, Ganzhou No. 3 Middle School, Ganzhou, China, T: Jinquan Wang

PS009 A Novel Discovery of Promoting Yeast Fermentation with Black Soybean Seed Coat
Lanqingqing Lou, 18, Senior, No.2 High School of East China Normal University, Shanghai, China, T: Yongyan Dang

PS010 Algae's Photoinhibition Sheds Light on Why Land Plants Evolved To Be Green, Not Black
Ruomeng Wan, 17, Senior, Experimental High School Attached to Beijing Normal University, Beijing, China, T: Bo Li

PH014 Research and Development of High-Efficient Non-Strobe Flash Electronic Ballast for Fluorescent Light
Yanheng Xu, 16, Junior, Tongan No.1 Middle School, Xiamen, China, T: LiangXi Kang

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Ruomeng Wan, 17, Senior, Experimental High School Attached to Beijing Normal University, Beijing, China, T: Bo Li

AS305 Investigating a Sleep Inducing Gene Found in *Drosophila melanogaster*
Daniel Tang, 17, Junior; Taylor Moor Sun, 16, Junior; Joonhee Leo Lee, 16, Junior, International School of Beijing, Beijing, China, T: Debra Monroe

CS042 Cost-Effective Interactive Augmented Reality Table
Cher Yeoh, 16, Junior, Chengdu International School, Chengdu, China, T: Glen Robert Walenda

EM312 CYBM Biodiesel
Young Ju Seo, 17, Sophomore; Hee Young Jang, 17, Junior; Elmer Benito Dominguez, 16, Freshman, Zhongshi Korean International School, Seihai, China, T: Allan Vidad Alipio

MA305 Auto-generation of High-Efficiency Transportation Networks
Ian Yiran Huang, 15, Sophomore; William Zong Ye Yang, 16, Sophomore, International School of Beijing, Beijing, China, T: Cathy Chen

MI311 Using Bacterial Division Rates to Estimate Genome Size
Michael Edward Scott, 16, Junior; Jonathan Lee Sims, 17, Junior, ChengDu International School, ChengDu, China; Chengdu International School, Chengdu, China, T: Glen Robert Walenda

CHINA, HONG KONG SPECIAL ADMINISTRATIVE REGION

Hong Kong, HKGO01, Hong Kong S&T Invention Contest

CH305 Mechanism of Chinese Silver Staining Diagnosis and Its Application as Rapid Test for Chronic Renal Failure
Tai Hei Chan, 18, Senior; Er Hai Fang, 17, Senior, King's College, Hong Kong, China, Hong Kong Special Administrative Region, T: Bob Lui

CS303 HeartBook & SmartHelper
Oi Ching Poon, 16, Junior; Yiu Ting Ho, 16, Junior, Shun Tak Fraternal Association Yung Yau College, Hong Kong, China, Hong Kong Special Administrative Region, T: Man Lee Liu

EM012 DNPH-based Formaldehyde Nano- Detector and Absorption Plate
Grace Yan Chuen Tang, 15, Sophomore, The Chinese Foundation Secondary School, Hong Kong, China, Hong Kong Special Administrative Region, T: Teresa Wing Yan Li

EM013 Biodegradable Breathable Band-Aids
Kan Wing Yi, 15, Sophomore, Maryknoll Fathers’ School, Hong Kong, China, Hong Kong Special Administrative Region, T: Yuen Man

EM304 Electrostatic Sanitizer
Hon Sing Wai, 17, Senior; Ho Yin Tam, 18, Senior; Man Kin Lai, 18, Senior, Ho Dao College, Hong Kong, China, Hong Kong Special Administrative Region, T: Kit Ying Lau
EN326  Metal Oxides@Polypyrrole Nanowire-based Pseudocapacitor
#  Chi Sum Wong, 17, Junior; Ka Lung Tsang, 15, Sophomore; Chi Kit Chang, 16, Sophomore,
The Chinese Foundation Secondary School, Hong Kong, China, Hong Kong Special
Administrative Region, T: Chun Man Ho

CHINA, MACAO SPECIAL ADMINISTRATIVE REGION
Macao, MAC001, Macao Region Science Fair
CS304  A New Secure Distributed Storage System for Cloud: Mathematical Framework,
Design and Applications
## Chih Wei Tan, 17, Senior; Hou Teng Cheong, 17, Senior, Pui Ching Middle School, Macau,
Macau, China, Macao Special Administrative Region, T: Chan Lam Wong
EE310  Barrier-Free Acoustic Magnetic Socket Parts
Soi Lam Wong, 17, Junior; Hin Chon Lei, 16, Sophomore, Escola Tong Sin Tong, Macau, China,
Macao Special Administrative Region, T: Kin Lao Ao Leong
ME303  Cardiototoxicity of Cinnabar in Zebrafish Embryos
Siu Yung Chan, 20, Senior; Man Wai Un, 17, Senior, Keang Peng Secondary School, Macao,
China, Macao Special Administrative Region, T: Kai Heng Lam

CHINESE TAIPEI
Taipei, TWN001, Taiwan International Science Fair
BI302  Identification of the Critical Amino Acids of Helicobacter Pylori Virulence Factor GroES
Involved in Inflammatory Response Induction
Yu–Chen Chen, 17, Junior; Pin–Hsin Chen, 16, Junior, Taipei First Girls High School, Taipei,
Chinese Taipei, T: Soofin Cheng
CH012  Synthesis and Applications of Reusable Solid Acid Catalysts for Biofuels Production
Yu–Hsuan Shen, 18, Senior, Taipei First Girls High School, Taipei, Chinese Taipei, T: Lu-Ping Chow
CS302  Design of an Optimum Switch Block for FPGA
Yuan–Hung Kuan, 17, Junior; Hung–kuan Yen, 17, Junior, Taipei Municipal Jianguo High School,
Taipei, Chinese Taipei, T: Greg C. Lee
EA005  Increase in Tropical Cyclone Intensity and Ocean Subsurface Warming in the Western North
Pacific Ocean
Yu–Hsin Chen, 17, Senior, Taipei First Girls High School, Taipei, Chinese Taipei, T: I-I Lin
EE024  Design and Engineering of an Innovative Wind Turbine Generator
Rou–An Lai, 14, Freshman, Keelung Municipal Jian De Junior High School, Keelung, Chinese
Taipei, T: Chih Hung Wei
MA012  A Rational Story of Pi: From Asymmetrical Cut to Weighted Average
Kuan–Yu Wang, 13, Freshman, San Min Junior High School, Kaohsiung, Chinese Taipei,
T: Chao–Hsun Huang
MI304  The State of Parental Mitochondria Influences the Replicative Lifespan of Zygotes of
Saccharomyces cerevisiae
Pei–Ming Chen, 16, Junior; Shao–ting Chiu, 18, Senior, Taipei Municipal Jianguo High School,
Taipei City, Chinese Taipei, T: Jun–Yi Leu
PH016  Studies of Non–Linear Deformation by Electric Point Contact
Shao–Ying Tseng, 14, Freshman, Kaohsiung Municipal Chien–Chin Junior High School,
Kaohsiung, Chinese Taipei, T: Hung–Liang Yen
PS013  Mechanistic Characterization of a Transcription Factor bZIP16 in Regulating Arabidopsis
Flowering Pathways
Yi–Hsuan Huang, 17, Junior, Taipei Municipal Jianguo High School, Taipei City, Chinese Taipei,
T: Min–Lih Tsai

COLOMBIA
Bogota, COL002, Feria Nacional de Ciencia, Tecnologia E Innovacion
ET315  Energy Production from Chlorella vulgaris Microalgae
Geydi Alexandra Bayona, 16, Sophomore; Elkin Sleider Agudelo, 15, Sophomore, Nuestra
Senora Del Pilar, Bucaramanga, Colombia, T: Sandra Liliana Sarmiento
PS317  The Vain Cayenne
Oriana Arrieta Mejia, 16, Junior; Carlos Javier Tapia Avila, 15, Junior, Institucion Educativa
Buenavista, Buenavista-Sucre, Colombia, T: Roberto Rafael Feria Gomez
Finalist Directory

Medellin, COLO001, Colombia Science & Engineering Fair

**BE043** Comparative Analysis of the Risks Towards Drunkorexia Suffering at Three Secondary Schools in Medellín, Colombia
Luisa Fernanda Castano, 13, Freshman, Institucion Educativa Javiera Londono, Medellín, Colombia, T: Diego Jose Garcia

**CS317** The Mind: Graphics and Physics Hybrid Engine for Video Games
Juan David Quintero, 18, Junior; David Restrepo, 17, Junior, Liceo Francisco Restrepo Molina, Envigado, Colombia, T: Alexander Castaneda Restrepo

**EE080** Efficient Systems in Solar Panels for CubeSat
Yesica Maria Gomez, 17, Junior, Institucion Educativa Ciro Mendía sede Asuncion, Medellín, Colombia, T: Rubiela Vanegas

**EN325** TPS (Thermoformed Plastic with Sand): Recycling Material as Coarse Aggregate in Concrete Mix
Kelly Tatiana Arredondo, 17, Junior; Sara Gonzalez, 17, Junior; Katherin Garces, 15, Junior, Institucion Educativa Colegio Loyola Para La Ciencia y La Innovacion, Medellín, Colombia, T: William Enrique Perez

**PS320** The Hydro-Aeroponic Crops, an Alternative Technique in Agriculture
Juan Esteban Gaviria, 17, Junior; Stefania Hernandez, 17, Junior; Sara Sanchez, 16, Junior, Institucion Educativa Santo Tomas de Aquino, Guarne, Colombia; Institución Educativa Santo Tomas de Aquino, Guarne, Colombia, T: Martha Nelly Naranjo

COSTA RICA

San Jose, CR0001, Feria Nacional de Ciencia y Tecnologia

**EE312** Intelligent Road Signage and Traffic Monitoring System
Jose David Porras-Solano, 17, Senior; Paulo Andres Diaz-Hernandez, 20, Senior, Colegio Tecnico Profesional Santa Lucia, Cartago, Costa Rica, T: Pablo Cesar Carpio-Leiva

**PS307** Strategic Procedure to Improve the Acclimation of Cassava (*Manihot esculenta*) *in vitro* Plants through Variation of Source and Quantity of Carbon
Laura Mariela Campos-Quesada, 17, Junior; Juan Manuel Segura-Castro, 18, Junior, Colegio Cientifico de Costa Rica, Sede San Carlos, San Carlos, Costa Rica, T: Sergio Torres-Portuguez

**PS310** Use of Bio Ferments in the Biological Control of moniliasis (*Moniliophtora roreri*) in Cocoa (*Theobroma cacao*)
Marcelo Guerra-Abrego, 19, Junior; Veronica Bustos-Guido, 17, Junior; Daylin Brian-Rodriguez, 16, Freshman, Liceo Academico de Sixaola, Limon, Costa Rica, T: Laura Vanessa Castillo-Mejias

San Jose, CR0002, National Engineering Expo

**EE307** Automated Point Design and Fabricator for Orthopedic Kirschner Pins
Maria-Luisa Ortiz-Torres, 18, Senior; Maria-Fernanda Ramirez-Monge, 18, Senior, Colegio Tecnico Don Bosco, San Jose, Costa Rica, T: Luis Alonso Carballe-Rojas

**EN309** Innovative Alternative Method for the Synthesis of Graphene
Roberto Delgado-Webb, 17, Junior; Brandon Eduardo Montero-Montoya, 16, Junior, Colegio Vocacional Monsenor Sanabria, Desamparados, Costa Rica, T: Danilo Rojas-Chanto

CZECH REPUBLIC

Brno, CZE001, Students' Professional Activities (SPA)

**BI013** Novel Inorganic Metallacarborane Inhibitors of HIV-1 Protease
Robin Krystufek, 18, Junior, Gymnazium Na Vitezne Plani, Prague 4, Czech Republic, T: Helena Vondrackova

**CH013** New Perspective Materials for Organic Photovoltaics
Michael Batrla, 19, Junior, Gymnazium T. G. Masaryka, Zastavka, U Skoly 39, Zastavka, Czech Republic, T: Martin Dojiva

**EE025** Personal Physiological Sensor Network Device
Marek Novak, 19, Senior, Gymnaziunm Ceske Budejovice, Jirovcova 8, Ceske Budejovice, Czech Republic, T: Jana Kalova

Prague, CZE002, AMAVET Czech Republic Science Fair

**MA007** Continued Fractions of Quadratic Numbers
Aranka Hruskova, 19, Senior, Gymnaziunm Christiana Doppler, Prague, Czech Republic, T: Lubomira Balkova
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Author(s)</th>
<th>Affiliation</th>
<th>Contact Information</th>
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</thead>
<tbody>
<tr>
<td>MI008</td>
<td>The Effect of Hyaluronic Acid and Glucose Concentration on Hyaluronidase Activity of Wound Pathogens <em>Staphylococcus aureus</em> and <em>Streptococcus agalactiae</em> Isolated from Chronic Wounds</td>
<td>Vaclav Kotyza, 18, Junior, Private Grammar School, Letohrad, Czech Republic, T: Martin Sojka</td>
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<td>PH010</td>
<td>Model of Soliton Waves</td>
<td>Jan Mazac, 19, Senior, Mendelovo Gymnázium Opava, Prispevkova Organizace, Opava, Czech Republic, T: Petr Pavlícek</td>
<td>Prague, EUB001, European Union Contest for Young Scientists (EUCYS)</td>
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<tr>
<td>ET067</td>
<td>Submersible Energy Apparatus – Linearly Extending Generator (SEA-LEG)</td>
<td>Alexander Heron Thanos, 18, Freshman, European School Munich, Munich, Germany, T: Gertraude Hofs</td>
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<tr>
<td>ME114</td>
<td>Aspirin and Salicylic Acid in the Combination with Inhibition of PI3K Promote Cell Death in Malignant Melanoma</td>
<td>Emilia Petrikova, 19, Senior, The Secondary School of Jozef Gregor Tajovsky, Banska Bystrica, Slovakia, T: Helena Majerova</td>
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<td>CH024</td>
<td>Astrobiology: The Formation of Life-Supporting Amino Acids on Cosmic Dust Particles</td>
<td>Alexander Morch, 19, Senior, Herlufsholm Kostskole og Gods, Naestved, Denmark, T: Niels Arnt Kristiansen</td>
<td>Copenhagen, DNK001, unge forskere</td>
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<td>ET066</td>
<td>Quantification of the Effect of Contamination in Lithium-Air Batteries</td>
<td>Emilia Wodzka, 19, Sophomore, Herlufsholm Kostskole og Gods, Naestved, Denmark, T: Jonathan Højberg</td>
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<td>BI036</td>
<td>Computational Prediction of Vaccine Potential Epitopes and 3D Structure of XAGE-1b for Non-small Cell Lung Cancer Immunotherapy</td>
<td>Mohamed Tarek Mansour, 17, Junior, Salman El Farisy High School, Cairo, Egypt, T: Tarek Mansour</td>
<td>Cairo, EGY001, Cairo Science and Engineering Fair</td>
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<tr>
<td>CS066</td>
<td>Eye Detection and Tracking-Based Communication System for Tetraplegia Patients</td>
<td>Abdullah Asem, 17, Senior, Dar Heraa Islamic Private School, Assiut, Egypt, T: Hamsa Abdel-Rahman</td>
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<td>CS314</td>
<td>Voice Recognition Based Elections Voting System for Blind</td>
<td>Enas Mohamed Safwat, 16, Sophomore; Nouran Mohamed Mohsen, 15, Sophomore, El-Gamma Secondary School, Assiut, Egypt; El-Gamaa Sec School, Assiut, Egypt, T: Ahmed Hamed Saied</td>
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<td>ET312</td>
<td>Heating Houses Using a Friction-Based Heating System that Employs Renewable Energy Sources</td>
<td>Shady Hesham El Shazly, 16, Junior; Ahmet Alpaslan Kilic, 17, Senior, Turkish Salahaldin International School, Cairo, Egypt; T: Ethem Yuksel, Ethem Yüksel</td>
<td>Alexandria, EGY002, BA Science and Engineering Fair</td>
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<td>EE326</td>
<td>G-14: A New Kind of Multi-rotors</td>
<td>Fares Essam Helmy, 16, Sophomore; Abdelaziz Ahmad Elmasry, 16, Junior, Elnasrya Boys School, Alexandria, Egypt, T: Samer Elkholy, Tarek Swilem</td>
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<td>EM328</td>
<td>Vacuum Evaporator for Water Purification</td>
<td>Mona El Sayed Abd El Gayed, 16, Junior; Sara Ezat El Hanbaly, 16, Junior; Hoda Mamdouh Shoman, 16, Junior, Maadi STEM School for girls, Cairo, Egypt, T: Eman Hosny Zian</td>
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</table>
Study of the Fluorescent Qualities of Yeasts in Different Liquid Environments
Annette Miller, 19, Senior, Tallinn School No.21, Tallinn, Estonia, T: Raivo Vilu

Musiclock
Perttu Polonen, 19, Freshman, Vaskivuoren Lukio, Vantaa, Finland, T: Merike Kesler

Optimization of Ferrofluid Foams Properties for Radioactive Decontamination
Adrien Chicot, 17, Senior; Emeline Gallo, 18, Senior; Johanna Jussey, 17, Junior, Notre Dame de Bury, Margency, France, T: Najiba Mensah Douja

Allergy among Students and Some Allergic Plants in Kutaisi (Imereti, Georgia)
Natali Tchumburidze, 16, Junior, Georgian-American School “Progress”, Kutaisi, Georgia, T: Tamar Cheishvili

Active Filter
Nika Alavidze, 17, Junior; Daviti Chkheidze, 16, Junior, Kutaisi Andria Razmadze Phyzics and Mathematics #41 Public School, Kutaisi, Georgia, T: Mikheil Kotishadze

Orthopedic Vest
Saba Mamukashvili, 17, Senior, Tbilisi #137 Public School, Tbilisi, Georgia, T: Liana Matiashvili

Transformer Clepsydrion: Deployable Support Framework with Varying Direction of Unfolding
Temur Chichua, 16, Junior, Tbilisi #4 Public School, Tbilisi, Georgia, T: Nana Phartenadze

Intelligent Traffic Light
Zaza Iremadze, 18, Senior; Besarion Kvatsikheli, 18, Senior; Nino Khimshiashvili, 17, Senior, Ltd. Gorda Batumi Multi-Profile Private School, Batumi, Georgia, T: Dimitri Beria

Microbiological Investigations of Mushrooms: Health Hazards due to Improper Storage?
Elena Haring, 14, Senior; Carlotta Pribbenow, 14, Senior, Schools: Lise-Meitner-Schule, Berlin, Germany, T: Grit Markschies

Dendritic Crystallization of Salts
Theresa Zeisner, 14, Sophomore, Okumenisches Gymnasium, Bremen, Germany, T: Jens-Henning Kreker

Supramolecular Host-Guest Complexes as Fluorescent Markers in Tumor Diagnostics
Gabriel Salg, 14, Senior, Hanns-Seidel-Gymnasium Hosbach, Hoesbach, Germany, T: Roland Full

Conway's Labyrinth
Jessica Lackas, 14, Senior, Max-Planck-Gymnasium, Saarlsruhe, Germany, T: Tim Lethen

The Portable Wood-Splitter: Faster Chopping, Safer Felling
Patrick Ziesel, 14, Senior; Joshua Rikker, 14, Senior, Jugend Forscht, Waiblingen, Germany; High School, Waiblingen, Germany, T: Michael Baun

Dynamic Mathematics on Smartphones and Tablets
Lennart Julian Kleinwort, 14, Freshman, Friedrich-Koenig-Gymnasium, Wurzburg, Germany, T: Robert Strich

Measuring Water Waves
Daniel Pfugger, 13, Senior, Gymnasium Johannesm Lueneburg, Lueneburg, Germany, T: Michael Rode

Rising Water
Marcel Neidinger, 14, Senior; Leonard Bauersfeld, 14, Senior, Hans Thoma Gymnasium, Lorrach, Germany, T: Hermann Klein

Natural Healing: Regeneration of Epicuticular Waxes on Leaf Surfaces
Johannes Reinhart, 14, Senior, Hans Thoma Gymnasium, Lorrach, Germany, T: Thilo Glatzel
GUAM
Mangilao, TEGU01, Guam Island-Wide Science Fair

CB048  An Alternative to the Use of Embryonic Stem Cells
Danielle Stephenson-Threatt, 14, Sophomore, St. Johns School Guam, Upper Tumon, Guam,
T: Christopher B. Reid

HUNGARY
Budapest, HUN001, Innovation Contest for Young Scientists

EE016  Poker Robot
Donat Sandor Hegyesi, 18, Senior, Toth Arpad High School, Debrecen, Hungary,
T: Miklos Nyircsak

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

AS056  Cashew Tree (*Anacardium occidentale*): An Effective Treatment for Cattle Dermatitis
Deeksha P. Hebbar, 14, Freshman, Vivekananda English Medium School, Puttur, India,
T: Prasanna Kumar Hebbar

AS304  *Rubus ellipticus*: An Effective Natural Solution against *Giardia intestinalis*
Abhishek Verma, 15, Freshman; Daksh Dua, 16, Junior, Maharaja Agarsain Public School, Delhi, India,
T: Ritu Gupta

CH017  A Novel Metal Complex as Anti-Cancer Drug
Arjun Rao Hurulihal, 16, Junior, Jawahar Navodaya Vidyalaya, Dharwad, Dharwad, India,
T: Pulin Nath

CH309  A Unique Kit for Detection and Removal of Pesticides from Fruits and Vegetables
Shreya Nandy, 16, Junior; Kopal Gupta, 16, Junior, Amity International School, Mayur Vihar, New Delhi, India,
T: Shalu Pillai

CS022  “PACEBYTE”: A Research Engine Based on Automated Summarization
Abhishek Mitra, 16, Junior, National Public School - HSR, Bangalore, India,
T: Samiran Mitra

CS040  Optimizing Digital Content for Color-Blind Audiences Using Enhancement Algorithms
Animesh Tripathi, 17, Senior, Sanskriti School, New Delhi, India, T: Saraswathi Ravi

CS313  Mammography Image Analysis to Ease Detection of Micro Calcification
Prachatos Mitra, 18, Senior; Shailpik Roy, 18, Senior, South Point High School, Kolkata, India,
T: Partha Pratim Roy

EE028  VOICE-O-NATOR: An Aid for the Speech Impaired
Amrit Sahu, 14, Freshman, Dav Public School, Bhubaneswar, Odisha, India, T: Rajan Das

EN023  Multi-layered Phytopigments: Promising Alternative Materials for Solar Cell Development
Debapratim Jana, 17, Junior, South Point High School, Kolkata, India, T: Anindita Chakraborty

MA018  Patterns in Random Numbers
Prajwal Shivanand, 15, Freshman, Vagdevi Vilas School, Bangalore, India, T: Abhilash Madhava

MI018  Keratin Waste: An Effective Management
Vasudev Malyan, 15, Sophomore, Lions Public Schools, Delhi, India, T: Ankur Malyan

PS019  *Brassica juncea* (Mustard) Flowers to Attract Pollinators for Better *Malus domestica* (Apple) Yield
Jaya Sagar, 15, Junior, Government Senior Secondary School- Manali, Manali, India,
T: Manjeet Kaur

INDONESIA
Jakarta, IDN001, Youth Science Competition

EE308  GO-SEGON: Segon Wood for Wind Turbine Blades
Edwin Luthfi Saputra, 18, Senior; Anisa’ Anisa’, 17, Senior, State High School 10 of Malang, Malang, Indonesia,
T: Nunik Setyaningsih

EM330  How the Tallasa Kamase-Mase and Customary Law Saved the Tana-Toa Forest and Water Resources
Nur Amaliah, 17, Senior; Inayatul Azisah, 17, Senior, State High School 1 of Bulukumba, Bulukumba, Indonesia,
T: Arif Kusmianto

EV017  Removal of Dissolved Heavy Metal Pollutant Using Tropical Peat Soils of Indonesia
Alfy Fathnur Aziza, 17, Senior, Al Hikmah Surabaya Senior High School, Surabaya, Indonesia,
T: Nur Chamimmah Lailis Indriani
Finalist Directory

Jakarta, IDN002, Olimpiade Penelitian Siswa Indonesia

EE309 Electromagnetic Energy Harvester to Power LEDs Illumination
Dwi Indah Anggraini, 16, Junior; Gigih Setyawan, 18, Senior; Sma Negeri 1 Salatiga, Salatiga, Indonesia; T: Isna Taviyani

EN312 Green Refrigerant Box
Muhtaza Azizya Syafiq, 16, Junior; Anjani Rahma Putri, 17, Senior; Sma Negeri 2 Sekayu, Musi Banyuasin, Indonesia; T: Dimas Candra Atmaja

MA301 Quadratic Tool
Ahmad Aulia Justisiananto, 17, Senior; Galih Pradipto Wisnukti, 18, Senior; Sma Negeri 1 Yogyakarta, Yogyakarta, Indonesia; T: Zainal Abidin

IRAQ

Enbil, IRQ001, INPO (Iraq National Project Olympiad)

CS312 Physics Interactive Materials Program
Mohammed Talib Hassan, 17, Junior; Sarhad Soran Ahmed, 17, Junior; Raman Obaid Ahmed, 17, Junior; Schools: Private Salahaddin Ayyubi College, Sulaimania, Iraq; T: Rahel Rizgar Jalal Jalal

EV302 Co-Eerting Surplus: To Collect to Separate Pollution Plant Materials of Rice Plantae with Fresh Water Perch Fish (Perca fluviatilis) of Trichderma Terrarium
Mohammed Nasih Mohammed, 17, Junior; Diyari Mawlud Murad, 17, Junior; Schools: Ishik Boys College, Erbil, Iraq; T: Ersin Arslan

MA030 Distance, Kinematic & Isometry in Geometry
Yad Luqman Hakim, 17, Junior; School: Private Salahaddion Ayyubi College, Sulaimania, Iraq; T: Abdullah Kurudirek

PH070 IR against Piracy
Hadaia Azad Ezzulddin, 14, Freshman; School: Nilufer Girls Secondary School, Erbil, Iraq; T: Mine Gumus

PH309 Green Synthesis of Palladium, Silver, Iron and Magnetite Zero Val lent Nano Particles
Bawar Mohammed Taha, 16, Sophomore; Aryan Harbi Sainod Harki, 16, Freshman; Farhang Razzaq Hamad, 17, Junior; Schools: Soran Ishik College, Soran, Iraq; T: Ali Kemal Atar

IRELAND

Dublin, IRL001, BT Young Scientist & Technology Exhibition

PH310 Solar Sailing with Modulated Radial Thrust
Sufyan Huma, 19, Senior; Mohammad Haider Hussain, 17, Senior; Schools: Christian Brothers Synge Street, Dublin, Ireland; T: Katherine Walsh

Local, Regional and National (Dublin), IRL002, SciFest

EE090 To Design and Manufacture a Device to Maximize the Performance of Rowers
Conor Richard Foy, 17, Junior; School: Colaiste Chiarain, Limerick, Ireland; T: Edel Farrell

MA036 On the Hamiltonicity of Cubic, Polyhedral, Bipartite Graphs
Paul Clarke, 17, Junior; School: St. Paul's College Raheny, Dublin, Ireland; T: Brian Smyth

ISRAEL

Jerusalem, ISR001, The Israeli Young Scientists Contest

BIO14 Biofuels from Plant Cell Biomass: Characterization of a Novel Enzyme
Noa Shulami, 17, Senior; Misgav High School, Misgav, Israel; T: Israel Ben Dor

EM305 Immediate Response System for Oil Spills
Avi Dubovsky, 18, Senior; Roey Shmuel Shafran, 17, Senior; Tamer Hamoud, 17, Senior; Ort “Psagot”, Karmiel, Israel; T: Reuven Dinovich

EN037 Improving the Efficacy of the Pinhole Glasses
Hanna Moalem, 16, Junior; School: Nazareth Baptist School, Nazareth, Israel; T: Eyad Hanna

MA015 Hidden Secrets in Cevian Triangles
Shahar Silberstein, 16, Junior; Makif Alef, Be’er Sheva, Israel; T: Peter Samovol

ME024 4-Synuclein rs356219 Polymorphisms in Patients with Gaucher Disease and Parkinson’s Disease
Daniel Ben Zion Ioscovich, 17, Senior; Schools: Israel Arts and Science Academy, Jerusalem, Israel; T: Anat Maoz
ITALY

**BI303  SpuntiNO’**
Alberto Agnoletti, 19, Senior; Alessio Mazzetto, 19, Senior, ISIS Arturo Malignani Udine, Udine, Italy, T: Eliana Ginevra

**CB012  p38 in Muscle Differentiation**
Giuseppe Dall’Agnese, 19, Senior, Liceo Scientifico E. Vendramini, Pordenone, Italy, T: Alessandra Dall’Agnese

**CS318  4+1**
Francesca Banchiero, 17, Senior; Margherita Pinna, 19, Senior; Alessandra Papa, 18, Freshman, ITIS “Michele Glua”, Cagliari, Italy, T: Antonello Zizi

**ET023  The Microbial Fuel Cell: Analysis, Developing and Performance Assessment**
Matteo Giardino, 18, Senior, ITIS Avogadro, Torino, Italy, T: Antonio Mandarano

JAPAN

**AS011  Flagellum Causes Euglenoid Movements by Detecting Contact Stimuli in Euglena**
Ayaka Suda, 17, Junior, Saitama Prefectural Ohmiya Senior High School, Saitama, Japan, T: Akira Kanno

**AS033  Body Temperature Regulation of Drone Beetles in Flight as Revealed by Remote Measurement of their Body Temperatures**
Taishi Kuriya, 17, Senior; Kiryu Kazama, 15, Junior; Yusuke Takami, 17, Senior, Kumamoto Prefectural Toyko High School, Kumamoto City, Japan, T: Sugakiri Tabata

**CH306  Development of a Simplified Separation and Identification Method of Metallic Ions by Using High Voltage Ionic Migration**
Yuta Fujisawa, 17, Junior; Iori Kai, 17, Junior; Eika Kudo, 16, Sophomore, Oita Uenogaoka High School, Oita, Japan, T: Shinichiro Takahashi

**EA302  Is Turbidite Deposited as Textbook Explains? Deposition of Turbidite Beds Analyzed by Diatom Fossils and Mud Contents**
Hinako Sakai, 17, Junior; Sae Sugahara, 17, Junior; Toshimi Hoshina, 17, Junior, Niigata Chuo High School, Niigata, Japan; T: Atsushi Saito

**PH303  A Flying Mechanism of a Helicopter Like Toy, “Bamboo Dragonfly”: Effect of Back Flow on a Lift Force in a Non-Stationary Condition**
Youdai Kametani, 17, Senior; Ryosuke Tamura, 18, Senior, Yamaguchi High School, Yamaguchi, Japan, T: Toshihiko Katsutani

**PS308  How CAM Plants Open and Close Stomata**
Kota Izumi, 17, Junior; Ryohei Noda, 17, Junior, Saitama Prefectural Ohmiya Senior High School, Saitama, Japan, T: Ryoji Osabe

**Tokyo, JPN002, Japan Science & Engineering Challenge**

**AS012  Leg Proposes, Antennae Disposes: Antennae Ultimately Determine the Turn Direction of the Pill Bug**
Yasuhiro Hayashi, 17, Junior, Toyama Prefectural Takaoka High School, Takaoka-City, Japan, T: Toshiya Ishida

**AS013  Development of a Mathematical Model to Assess Territory Establishment by the Fiddler Crab, Uca lactea, Based on Tracking Walking Trajectories**
Yuki Mochizuki, 18, Senior, Miyazaki Omiya High School, Miyazaki-City, Japan, T: Kazuki Kurogi

**CS020  Detecting the Structure of Videos by Extracting Features from Time Series User Interaction Data**
Hiromu Yakura, 17, Junior, Nada Senior High School, Kobe, Japan, T: Keisuke Kawanishi

**EA006  Tidal Rhythms Recorded in Precambrian Banded Iron Formations**
Chinami Motomatsu, 18, Senior, Chiba Prefectural Yakuendai Senior High School, Funabashi-City, Japan, T: Naoto Saito

**EN018  Measurement of Adhesive Forces between Soil Particles and Identification of the Factors Affecting Those Forces**
Koichiro Miyake, 17, Junior, Kyoto Municipal Horikawa High School, Kyoto, Japan, T: Isao Iizawa
ET021  Development of Highly Efficient and Stable Dye-sensitized Solar Cells Using Natural
Hydrangea macrophylla Dyes
Mie Yamanaka, 17, Junior, Miyagi Prefectural Sendai Daini Senior High School, Sendai-City,
Japan, T: Naoshi Watanabe

MI016  Development of Bright and Constant Lighting Using Luminescent Bacteria
Kotaro Mizoguchi, 18, Senior, Meikei High School, Tsukuba, Japan, T: Tomoko Suzuki

PS309  The Arrangement of Florets in Anthodina Optimizes Production of Germinable
Seed in the Sunflower
Shoko Harano, 16, Sophomore; Arisa Shibata, 17, Junior; Nana Suzuki, 17, Junior, Hitachi First
Senior High School, Hitachi-City, Japan, T: Fuminori Itoh

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

BE014  Hawking for Deaf
Lina Ramez Almibaidin, 15, Sophomore, Aljazeera School, Amman, Jordan,
T: Osama Ramez Almibaidin

BE316  The Blind's Device
Ahmad Thaer Abu Farha, 14, Freshman; Hasan Mohammed Nour Ramadan, 15, Freshman,
International Pioneer Academy, Amman, Jordan, T: Ramzi Zuhier Alqaraleh

EE323  Safety Car Control System
Saad Ammar Saboura, 16, Freshman; Ayman Emad Tafesh, 16, Junior, International Pioneer
Academy, Amman, Jordan, T: Hazem Hamdan

EM306  Stretch the Road
Mohammad Akram Salameh, 15, Sophomore; Adam Jamal Belaid, 15, International Academy -
Amman, Amman, Jordan, T: Maha AlHaj Mohammad

EM325  Environmental Stove
Musbah Abdel Hay Maraqa, 16, Junior; Qusai Taysir Hussein, 16, Junior, Alra'ed Al Arabi
School, Amman, Jordan; Al Raed Al Arabi, Amman, Jordan, T: Maha Da'as

EN024  Healthy Posture Monitor (HPM)
Jamal Hazem Sa'd, 15, Sophomore, Jubilee Institute, Amman, Jordan,
T: Ma'in Abdelhadi Abumuhfouz

ET028  An Innovative Way to Help in the Functioning of Cars on the Roads in Snow and Ice
Abdel Rahman Yaser Alrajabi, 15, Freshman, Modern Systems School, Amman, Jordan,
T: Samer Hammour

MA051  Completing Polynomials of n-th Order, Super Conic Sections and New Geometric Shapes
Ala'a Abdel Hadi Abu Mahfouz, 17, Junior, Princess Basmah School, Amman, Jordan,
T: Ma'in Abdelhadi Abumuhfouz

ME025  Pharmaceutical Solution for Blood Clotting Using Honey, Honey Wax, Etamsylate, and
Adrenaline Injection
Laiith Imad Al-Abdallat, 16, Junior, Jubilee School, Amman, Jordan, T: Khalil Asfour

KAZAKHSTAN
Astana, KAZ001, DARYN National Junior Science Projects Competition

EN321  Derivatization of the Carbon Membranes and Analysis of Their Characteristics
Nurila Kambar, 16, Sophomore; Asset Zhanabayev, 17, Junior, Republican Physics and
Mathematics School named after O.Zhaustikov, Almaty, Kazakhstan;
Ust-Kamenogorsk Physics Mathematics and Informatics School-Lyceum #25, Ust-Kamenogorsk, Kazakhstan, T: Mels Buranbayev

MA045  Alternative Proof of 100 Inequalities: Method of Separating Tangents
Adilsultan Lepes, 17, Junior, Republican Physics and Mathematics School Named After O.
Zhaustikov, Almaty, Kazakhstan, T: Ibragim Ibatulin

KENYA
Nairobi, KEN001, Kenya Science and Engineering Fair

CH308  Biofuel from Tree Fungus
Davanyi Kunvarji Vasta, 15, Sophomore; Priyal Parbat Varsani, 15, Freshman, Shree Cutchi Leva
Patel Samaj School, NAIROBI, Kenya, T: Laban Muchukoo Chweya

CH315  Multiple Chemical Generator
Janvi Jiten Pabari, 13, Freshman; Nishta Amrish Patel, 13, Freshman, Jalaram Academy,
Kisumu, Kenya, T: Tobias Okeyo Nyiamo
KUWAIT
Kuwait, KWT001, Kuwait Science and Engineering Fair

BE009  Psychological Defense Mechanisms with Students of Intermediate Level
Ali Mohammad Abbas, 15, Sophomore, Jaber Al-Mubarak Al-Sabah, Surra, Kuwait,
T: Iman Salama

BE317  Ants Advance
# Fatima Khaled Mahdi, 18, Senior; Zaineb Khaled Mahdi, 17, Senior, Fatima Al-Sarawy
Secondary School for Girls, Al. Salam, Kuwait; Fatmah Al-Sarawy, Al-Salam, Kuwait,
T: Eman Salama, Iman Salama

CH036  Evaporation Enhancement
Zahraa Bader Alnakkas, 15, Sophomore, Bayan High School, bayan, Kuwait,
T: Walaa Tarek Mohammed

LEBANON
Beirut, LBN001, Lebanon Science Fair

BE034  Lucid Dreaming
# Claude Boueri, 16, Freshman, Antonine Sisters School, Ghazir, Lebanon, T: Tony Abi Atmi

CH037  Inked
# Tracy Abi Hanna, 16, Freshman, Antonine Sisters School, Lebanon, T: Tony Abi Atmi

CS315  Rocket Application
# Gilbert Bustros, 17, Junior; Hicham Nasr, 18, Freshman, Antonine Sisters School, Roumieh,
Lebanon, T: Antoine Tannous

EE066  Autocool
Johnny Sawma Awad, 17, Junior, Antonine Sisters School, Ghazir, Lebanon, T: Tony Abi Atmi

EN323  Portable Kidney
# Celia El Halabi, 16, Freshman; Serage Amatory, 17, Junior, Canadian High School,
Beirut, Lebanon, T: Akram Affara, Nader Soboh

ME088  The International Medical Unit (UMI)
### Radwan El Othman, 18, Freshman, Rawdat El Fayha School, Tripoli, Lebanon, T: Ibrahim Fattal

LUXEMBOURG
Luxembourg, LUX001, Concours Jeunes Scientifiques Luxembourg

MI315  Effect of Ginger on Escherichia coli
Eloise Jennes, 16, Junior; Vanessa Klapp, 17, Junior, Attert-Lycee Redange, Redange/Attert,
Luxembourg, T: Marc Olinger

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

CH027  Carbonized Pineapple Peel (CPP) Waste as Low Cost Adsorbent for Acid and Reactive
Dyes Removal
Meor Zulhilmi Syahir Ahmad Shohaillee, 16, Junior, Tun Syed Sheh Shahabudin Science
Secondary Boarding School, Bukit Mertajam, Malaysia, T: Go Seow Ann

EM006  Bio-Waste Materials as Eco-Friendly Mordant in Fabric Dye Process
Faye Sow-Fei Jong, 15, Sophomore, Sekolah Menengah Kebangsaan Batu Lintang, Kuching,
Malaysia, T: Yee Chuen Lim

EV056  Cymbo Quito as an Alternative to Reduce Mosquito Population
Nur Zayani Zamri, 16, Freshman, SMK Seri Kenangan, SEGAMAT, Malaysia,
T: Marina Binti Sapuan

EV307  Super Spider Sieve
Ain Adibah Binti Roslaile, 17, Junior; Farah Hanin Mustapha, 17, Junior, Kolej Tunku Kurshiah,
Seremban, Malaysia, T: Norizan Mohd Darawi

EV318  MENTH-RID-RAT
Nur Arifah Binti Mohamad Jamil, 16, Freshman; Imran Bin Miwan, 17, Junior,
SMK Seri Kenangan, SEGAMAT, Malaysia, T: Marina Binti Sapuan

Kuala Lumpur, MYS002, MRSM Young Scientist

EE314  Ambulance Emergency Radio Intercept System [AERIS]
Syed Syamil Bin Syed Osyan Abadi, 16, Junior; Muhammad Shahradzaman Bin Jalaluddin, 17,
Junior, MARA Junior Science College Tun Dr. Ismail, Pontian, Pontian, Malaysia,
T: Norfairizam Nordin
EV311  New Discovery of Eco Plyfibre via Pineapple Leaf and Recyclable Plastic for Future Sustainability
Nur Hanis Suriani Binti Mohd Zaini, 16, Junior; Nurul Najiha Binti Mohd Roslan, 17, Junior, Mara Junior Science College Terendak, Melaka, Malaysia, T: Wan Rohila Binti Wan Hassan

PH064  The Slurper: Gas Operated Super Suction & Spray Device (GOS³D)
Dharsyanth Rao A/l Sivarao, 16, Junior, Mara Junior Science College Terendak, Melaka, Malaysia, T: Wan Rohila Binti Wan Hassan

MEXICO
Sinaloa, Guadalajara, Puebla, Estado de México, MEX001, Mexico Science and Engineering Fair

BE021  “ANATORAMA”: The Wonderful Human Body
Marisol Leon Cruz, 19, Senior, Colegio de Bachilleres del Estado de Sinaloa, Mazatlan, Mexico, T: Melina Villanueva Aguirre

BE310  Prodenit
Aaron Macias Juarez, 17, Junior; Jesus Armando Jaramillo Lizarraga, 17, Junior, Colegio de Bachilleres del Estado de Sinaloa 65, El Pozole, Rosario, Mexico, T: David Macias

CH310  Manufacture and Design of a Grating-Based Low Density Polyethylene and Urea Formaldehyde Obtained from Human Urine
Monserrat Escarcega Ramirez, 18, Senior; Tania Lizbeth Cortes Garcia, 17, Senior; Andres Lopez Carrasco, 17, Senior, Escuela Preparatoria Oficial No. 19, San Martín de las Pirámides, Mexico, T: Héctor Guadalupe Juarez Martinez

EE319  Sobreviviente (Survivor)
Jose Ernesto Sauceda Lopez, 18, Senior; Felipe De Jesus Sauceda Lopez, 14, Freshman, Universidad Autonoma de Guadalajara, Zapopan, Mexico; Escuela Secundaria Tecnica #5, Mazatlán, Mexico, T: Claudia Veronica Nieblas Sanchez

EE324  Educational Module Development Multiple Knowledge
Jaqueline Beciez Bedolla, 18, Senior; Juan Carlos Carlos Garcia Hernandez, 17, Senior, Centro de Bachillerato Tecnolóxico Industrial y de Servicios No. 260, Puebla, Mexico, T: Esteban Martinez Bonilla

ET038  Hidrociclismo
Saul Pérez Arana, 16, Junior, Preparatoria de Tonala, Universidad de Guadalajara, Tonala, Mexico, T: Sandra Jara Castro

EV308  Rainwater Harvesting
Karla Judith Estrada Hernandez, 17, Senior; Margarita Trinidad Rebollo Castaneda, 17, Senior; Abigail Montserrat Morales Guerrero, 18, Senior, Escuela Preparatoria Oficial No.102, Tlalmanalco, Mexico, T: Mario Alberto Hernandez Flores

EV317  The Esquilmo Whey of Natural Cheese an Alternative to Prevent Fires at Home
Clara Gomez Quintana, 18, Senior; Jesus Benitez Serrano, 17, Junior, Colegio de Estudios Cientificos y Tecnologicos del Estado de Mexico Plantel Aculco, Aculco, Mexico, T: Gregorio Plata

ME017  TETEBENE: Effects of the Experimental Therapeutic Model Isolated Peptide Toxic-prodrug in the Treatment of Subjects with Breast Cancer and with/without Diabetes
Demetrio Agustín Rodriguez Fajardo, 18, Junior, Centro de Ensenanza Tecnica Industrial Plantel Colomos, Guadalajara, Mexico, T: Cecilia Hernandez Caussor

PH307  The Dark Matter inside of Early Type Galaxies
Angel Alejandro Martinez Jimenez, 18, Senior; Omar Perez Alvarado, 17, Senior, Preparatoria del Tecnológico de Monterrey Campus Guadalajara, Zapopan, Mexico, T: Alma Delia Zamarripa Flores

PS313  CUCARI-YA (Biological Insecticide Based Poisonous Plants)
Maria Elena Ortiz Campos, 17, Junior; Edgar Ignacio Morales Jimenez, 17, Junior; Lorena Felipe Trinidad, 17, Junior, Colegio de Bachilleres del Estado de Puebla Plantel 6, Puebla, Mexico, T: Cynthia Cabrera Torres
NETHERLANDS
Amsterdam, NLD001, INESPO: International Environmental and Sustainability Project Olympiad
EM329 The Desert Vapor Tube: A 1 km Tube which Desalinates Ocean Water by Using Solar Power
# Robert Cornelis Adriaan De Bruijne, 16, Sophomore; Wouter Johanan Martijn Boot, 15, Sophomore, Calvijn College, Goes, Netherlands, T: Johan Ten Cate

NEW ZEALAND
Wellington, NZL001, Genesis Energy Realise the Dream
MI067 Kawakawa Extracts Demonstrate Anti-Inflammatory Activity
Chris Ryan, 18, Sophomore, Howick College, Auckland, New Zealand, T: Debbie Woodhall

NIGERIA
Benin City, NGA003, Genius National Science Science Expo
EE327 Traffic Control System for the Blind
Edi Peremobowei, 14, Senior; Victory Samuel, 14, Senior, Teto Model College, Yenagoa, Nigeria, T: Okonkwo Nnaemeka
EE338 Power Failure Solution
Dauda Temitope Ibrahim, 18, Junior; Olufemi Samuel Salami, 18, Junior, Government Technical College, Lagos, Nigeria, T: Kehinde Yekini Salau
EE339 The Nona Piece
Glory Uko Ibanga, 15, Junior; Jeffrey Ini-Abasi Jude, 14, Junior, Air Force Comprehensive School, Uyo, Nigeria, T: Mfon Cyprian Akpan
EE340 Design and Construction of an Electronic Pest Control Device
Imelda Osaji, 15, Junior; Elect Chinyere Nicholas, 15, Junior, Maryam Babangida Girls Science College, Minna, Nigeria, T: Daniel Loguma
ET308 Who Says Energy Is Scarce? It Is Everywhere
Opeyemi Jubril Bello, 17, Junior; Kpakpando Ruth Akaeze, 14, Junior, Doregos Private Academy, Lagos, Nigeria, T: Oluseyi Olaide Lawal
ME316 Walnut: Sustainable Solution to Halitosis
Eveshorhema Sophia Samuel-Alli, 14, Junior; Ibukunoluwa Ruth Oladeinde, 15, Junior, Doregos Private Academy, Lagos, Nigeria, T: Oluseyi Olaide Lawal

NORTHERN IRELAND
Belfast, NFK001, Sentinus Young Innovators
EE046 Fone2Find
John Neill, 16, Sophomore, Down High School, Downpatrick, Northern Ireland, T: Frances Neill

NORTHERN MARIANA ISLANDS
Saipan, NMI001, Northern Marianas Science & Engineering Fair
CS027 A User-friendly Computer Program Implementation of the RSA Public-key Encryption Algorithm in Python 3.3
# Yun Ha Seo, 17, Senior, Tinian Junior High School, Tinian, Northern Marianas Islands, T: Mikkel Castro

NORWAY
Oslo, NOR001, Norwegian Contest for Young Scientists
EA013 Factors that Affect the Accuracy of 3-Dimensional Acoustic Locating for Sound Emitting Objects
Maria Zakharaova, 19, Senior, International School of Stavanger, Stavanger, Norway, T: Simon Taylor
EE055 How Does the Aspect Ratio of a Wing Affect the Lift Per Unit Area of the Wing?
Stefano Croatto, 18, Senior, International School of Stavanger, Stavanger, Norway, T: Simon Taylor

OMAN
Muscat, OMN001, The Omani National Science Fair
BE313 Robot of Upbringing Genius Kids for the Future
Adam Saif Alhinai, 14, Sophomore; Asaad Said Alhinai, 14, Sophomore; Alwaleed Mohammed Alnasser, 16, Sophomore, Abu Aldarda Public School, Ibri, Oman, T: Abdullah Alsaufi
Finalist Directory

EE331 Ascender Cleaner
Shahad Aadi Alshezawi, 14, Freshman; Doaa Nasser Almqbali, 15, Freshman; Ruqaiya Ali Alajmi, 14, Freshman, Alturaf Basic School, Sohar, Oman, T: Latefa Almuqbali

EM040 Purification of Water Using Dry Palm Leaves
Abdul Aziz Ali Alhashemi, 15, Sophomore, Habib bin Zaid, Sur, Oman, T: Ali Alkasbi

PAKISTAN
Islamabad, PAK001, Intel Science Fair

EE077 Surveillance and Spy Robot
Syed Talal Wasim, 16, Junior, Aga Khan Higher Secondary School, Karimabad, Karachi, Pakistan, T: Zeeshan Ahmed Khan

EM324 Cheap and Efficient Conversion of Plastic Garbage into Combustable Oil
# Haris Bin Ashraf, 16, Junior; Muhammad Tahir, 17, Junior; Muhammad Babar Shah, 16, Junior, Defence Authority Sheikh Khalifa Bin Zayed College, Karachi, Pakistan, T: Irum Khalid

ET313 Working of Wind Turbine with Low Air Pressure
Sana Batool, 15, Freshman; Shazia Bibi, 15, Freshman; Iqra Irshad, 14, Freshman, Punjab Daanish Girls School, Hasilpur, Pakistan, T: Maryam Akbar

PALESTINE
Ramallah, PSE001, Palestine Science and Technology Fair

CS086 Talking Keyboard for the Blind
Layan Amer, 14, Freshman, Abe-Salma Alkarmi, Tulkarm, Palestine, T: Rasha Jallad

EE316 Safe Cooker
Maram M. Al taradeh, 16, Junior; Iman A. Khamayseh, 17, Junior, Taffouh Girls High School, Hebron, Palestine, T: Shorouq Yahya Al Sarsour

EM034 Biomass Waste Recycling by Using High Heat in Green Houses

EM315 Green Technology
Atheer F. Dwikat, 16, Junior; Wafaa A. Hamayel, 17, Junior, Beita Secondary School, Nablus, Palestine, T: Rowaida Mahmoud Sadeq

PANAMA
Panama City, PAN001, Feria Cientifica del Ingenio Juvenil

CB033 Preliminary Identification of Paramagnetic Extracellular Vesicles in Plasmodium falciparum-Infected Erythrocytes
Enrico Calvanese, 15, Junior, Instituto Panamericano, Panama, Panama, T: Ricardo Correa

EV309 Effects of Solid Waste on the Colonization of Organisms Associated to Coastal Mangrove Forests
Jakeline Ku Cen, 16, Sophomore; Javier Agustin Ku Cen, 18, Junior, Colegio Parroquial San José de Almirante, Almirante, Panama, T: Suseth González Peña Loza

PERU
Lima, PER001, Peru Science and Engineering Fair

CS307 Turn Your Standard Screen in to a Touch Screen
Joseph Andre Centurion Torres, 14, Freshman; Bruno Ernesto Esquivel Trujillo, 15, Freshman, San Luis, Ilo, Peru, T: Miriam Dany Minaya Benavides

EM311 Help Me! I Can't Take It Anymore: Together We Will Succeed
Fernando Enrique Tello Vargas, 13, Freshman; Jhosley Yeltzin Culqui Vasquez, 13, Freshman, San Juan de la Libertad, Chachapoyas, Peru, T: Marda Cruz Ordinola Reyna

PH038 The TAWA Method: Demonstration of the Alternative Method (Arithmetic Algorithm) to the Fundamental Formulas for the Solution of Problems and Definition of Concepts of Uniformly Accelerated Linear Motion (UALM)
Omar Alonso Aguilar Collantes, 15, Junior, Lord Byron, Lima, Peru, T: Ysabel Martinez Lora
The Effect of the Aqueous Extract of *Lepidium meyenii walp* Compared to Rivastigmine in the Memories of Rats that Have Scopolamine-Induced Amnesia in the Biotery of the Educational Institution “Jose Maria Arguedas”

Sarely Jahel Usuriaga Leon, 17, Junior; Aylinne Wendy Rivera Cangalaya, 17, Junior, Jose Maria Arguedas, Yauli, Peru, T: Edwin Raul Hinostroza Garay

**PHILIPPINES**

*Pasig City, PHL001, Philippines Science Fair*

**EM308**  
**Bioremediation of Diesel Oil Contamination Using Bacillus Found in Palm Oil Sludge**  
Lea Monteron Sibay, 16, Senior; Nicole Orcullo Cejas, 16, Senior; Magenta May Viernes Orozco, 16, Senior, Agusan del Sur National High School, San Francisco, Philippines, T: Julie Ann Mason Bonsubre

**EN008**  
**Wings of Neurothemis terminata (Dragonfly): A Unique Hydrophobic Nanosculptured Surface Model**  
Angelo Gabriel Abundo Urag, 14, Sophomore, Father Saturnino Urios University, Butuan, Philippines, T: Benito Aragon Baje

**EN314**  
**Fabrication and Characterization of Chitin Nanowires on Doped N/Mn Carbon Nanostructures for Thin Film Solar Cell Applications**  
Michael Angelo Babatid De Chavez, 16, Senior; Danise Bartolome Chan, 15, Senior; John Steven Desamparado Ablong, 15, Senior, Victorino Mapa High School, Manila, Philippines, T: Luzviminda Dinglasan

**ET029**  
**Isolation and Identification of Thermophilic Compost Bacteria and Screening of their Cellulolytic Activity**  
Michael Angelo Zafra, 16, Senior, Taguig Science High School, Taguig, Philippines, T: Oliver Araneta Lhorra

**POLAND**

*Poznan, PLD001, E(x)plory International Science Fair*

**CH044**  
**The Influence of Sample Preparation on Raman Spectrometry Spectrum with the Application of SERS Effect**  
Marcin Witkowski, 19, Senior, Secondary School No. 6 in Radom named after Jan Kochanowski, Radom, Poland, T: Elzbieta Siwiec

**ME106**  
**Multicomponent Drug Delivery Systems Based on PLCL Nanofibers and Modified Gold Nanoparticles in Cancer Treatment**  
Joanna Michalina Jurek, 17, Junior, I Liceum Ogolnoksztalcace im. Bolesława Chrobrego w Piotrkowie Trybunalskim, Piotrków Trybunalskim, Poland, T: Ewelina Zabost

**PH071**  
**Optimizing the Process of Single Photons Coupling into Single-Mode Fibers by Using a Genetic Algorithm and Spatial Light Modulation**  
Jerzy Krzysztof Szuniewicz, 17, Junior, Adama Mickiewicza High School in Poznan, Poznan, Poland, T: Krzysztof Dobek

**PORTUGAL**

*Lisboa, PRT001, Portugese Contest for Young Scientists*

**EE315**  
**TBox: Tracking Box**  
Andre Santos Ferreira, 17, Junior; Goncalo Goncalves Duarte Pires, 16, Senior; Ricardo Martins Coelho Nunes, 18, Senior, Oliveira do Bairro High School, Oliveira do Bairro, Portugal, T: Joaquim Almeida

**MI313**  
**Bacteriophage Lotion: A Way of Preventing the Spread of Bacterial Diseases**  
Beatriz Cunha Quiaios, 18, Senior; Ana Rita Ferreira Monteiro, 18, Senior, Colegio Valsassina, lisbon, Portugal, T: Andreia Luz

**PUERTO RICO**

*Arecibo, TEPR02, Arecibo Regional Science Fair*

**EM316**  
**Environmental Gazebo**  
Krystal Enid Valle, 17, Senior; Tania Diaz, 17, Senior, Brígida Alvarez Rodriguez, Vega Baja, Puerto Rico, T: Vyomar Santiago

**ET043**  
**Optimization of Gasoline Performance Through Physical Changes Before the Combustion Process**  
Patricia Romero, 15, Sophomore, Escuela Especializada en Ciencias y Matemáticas Brígida Álvarez Rodriguez, Vega Baja, Puerto Rico, T: Diana Cheverez
MI035  Effect of the Application of Carbon Dioxide in the Microbiology of Fresh Raw Milk
Gabriela Maria Trinidad-Perez, 16, Junior, University Gardens High School, San Juan, Puerto Rico, T: Pablo Javier Hernandez-Garcia

PS046  Marine Algae as Fertilizers in the Bio-Orchard
Luis Xavier Salgado, 14, Freshman, Marcelino Canino Canino, Dorado, Puerto Rico, T: Gladys N. Munoz

Bayamon, TEPR03, Bayamon Regional Science Fair I

EA014  Early Warning System in Landslide Risk Areas
Nalimary Gonzalez, 14, Freshman, Abelardo Diaz Alfaro, Toa Alta, Puerto Rico, T: Kathia Michelle Marrero

ME054  The Extract of the Moringa oleifera Tree Leaves as an Inhibitor of Colorectal Cancer Cells
Carlos Francisco Rivera, 17, Junior, Jose Rojas Cortes, Orocovis, Puerto Rico, T: Carol Judith Morales

Caguas, TEPR04, Caguas Regional Science Fair

EE051  Wind Generated by Moving Vehicles on the Highway as a Source of Electricity
Ruben Edgardo Rodriguez, 15, Sophomore, Bonifacio Sanhez Jimenez, Aibonito, Puerto Rico, T: Reinaldo Gerardo Rosado

EM317  Isolation, Characterization and Identification of Microorganisms with Hydrocarbon Degradation Activity for Bioremediation in Polluted Soils
Jose Javier Colon Rodriguez, 17, Senior; Angelo Louis Vazquez Barreto, 17, Senior, Superior Vocacional Benjamin Harrison, Cayey, Puerto Rico, T: Carmen J. Del Toro

Mayaguez, TEPR05, Mayaguez Regional Science Fair

EE052  A Better Solar Heater in the Form of a Triangular Pyramid
Bianca Paola Inostroza, 15, Sophomore, Colegio San Antonio Abad, Humacao, Puerto Rico, T: Laura Rosado

PH043  Relation between the Flux of Galactic Cosmic Rays and the Occurrence of Tropical Cyclones in the Caribbean
Andy Jonuel Lopez, 16, Junior, Petra Mercado Bougart, Humacao, Puerto Rico, T: Gilda Jiménez

Mayaguez, TEPR08, Mayaguez Regional Science Fair

BI307  Characteristics of Sulfhydric Acid (H2S) Interactions with Lysozyme Amyloid Fibers
Javier Martinez-Rodriguez, 16, Senior; Indra Gonzalez-Ojeda, 16, Senior, Centro Residencial de Oportunidades Educativos de Mayaguez, Mayaguez, Puerto Rico, T: Brenda Marie Cabrera

EM023  Can the Application of Vegetable Oil to a Soil Surface Reduce Soil Evaporative Losses and Conserve Water to Avoid Aridity?
Sopuruchi Stephania Uwakweh, 15, Sophomore, Escuela Bilingue Sergio de Arellano - Hostos, Añasco, Puerto Rico, T: Carmen Perez

EN034  Study of Properties of Aluminum Wires Treated with Nanoparticles of MoB2
Michelle Dyane Marrero-Garcia, 15, Sophomore, Eugenio Maria de Hostos High School, Mayaguez, Puerto Rico, T: Marisol Colon-Lancara

Mayaguez, TEPR10, SESO Regional Science Fair

EM024  De-Inking Process: Fungal vs. Bacterial
Sergio Andres Collado, 15, Sophomore, Southwestern Educational Society, Mayaguez, Puerto Rico, T: Evelyn Montalvo

Ponce, TEPR06, Ponce Regional Science Fair

ME056  Comparative Study of Aqueous and Ethanolic Extracts of Annona muricata L. Leaves in the Inhibition of the Inflammatory Breast Cancer Cells SUM-149 (Second Phase)
Shannie Anjulisha Castilloyeitía, 17, Senior, Specialized Science and Math Secondary School Thomas Armstrong Toro, Ponce, Puerto Rico, T: Carmen Belen Noble

ME107  Comparative Study of the Effects of Kalanchoe pinnata Leaves Extracts, Obtained through Different Methods, in the Growth of Pseudomonas aeruginosa, Streptococcus salivarius and Staphylococcus aureus Bacteria
Emily Lisandra Colon, 18, Senior, Specialized Science and Math Secondary School Thomas Armstrong Toro, Ponce, Puerto Rico, T: Carme Belen Noble

PS318  Study of the Effect of the Major Components of Bixa orellana L. Seeds in Mosquito Control
Keren Mishell Galarza, 16, Junior; Ester Mary Castro, 17, Junior, Asuncion Rodriguez de Sala, Guayanilla, Puerto Rico, T: Gladys Beatriz Vega
San Juan, TEPR01, Puerto Rico Math Fair

MA026 An Application of Polynomials to Generate Pythagorean Triples
Faviola Marrero-Soto, 15, Sophomore, Ramon Power y Giralt, Las Piedras, Puerto Rico, T: Marilee Soto-Torres

MA027 Approaching Factorial Numbers by Refining Stirling's Formula
Carlos Javier Lopez-Sierra, 16, Junior, University Gardens High School, San Juan, Puerto Rico, T: Eric Ivan Figueroa

MA028 Applying Game Theory, Statistics and Linear Algebra to Real Life Situations
Ray Alexander Rosario, 15, Sophomore, University Gardens High School, San Juan, Puerto Rico, T: Eric Ivan Figueroa

MA304 Comparative Study on the Efficiency of the Stochastic and Wall Follower Methods of Solving Mazes in Three Dimensions
Gian Carlo Rivera Crespo, 17, Senior; Axel Gabriel Diaz Morales, 18, Senior, Brigida Alvarez Rodriguez Mathematics and Science High School, Vega Baja, Puerto Rico, T: Hector Otano Vega

San Juan, TEPR07, San Juan Archdiocesan Region Science Fair

EV304 Bacterial Colonies Growth in Presence of: Al, Ni, Pb, Cd, and Zn
Rocio Taire Vazquez Beltran, 14, Freshman; Jose Martinez, 15, Freshman, Colegio Marista, Guaynabo, Puerto Rico, T: Isabel Perez

MA019 Patterns in Exponents
Isak Romero, 15, Sophomore, Academia del Perpetuo Socorro, San Juan, Puerto Rico, T: Osmar Milanes

ME031 Inhibiting the Growth of the Aedes aegypti Larvae on Used Car Tires Utilizing Baby Oil Capsules: Dengue Fever Primary Prevention
Francisco Antonio Alvarado, 15, Freshman, Colegio San Ignacio de Loyola, San Juan, Puerto Rico, T: Wanda Liz Santos

MI023 The Soursop: A Natural Antibiotic
Jorge David Garcia, 14, Freshman, Academia San Jorge, San Juan, Puerto Rico, T: Maria de Lourdes Fernandez

San Juan, TEPR09, San Juan Regional Science Fair

AS307 The Effects of Non-Ionizing Radiation from Wireless Fidelity in the Circadian Rhythm of the Fruit Fly (Drosophila melanogaster)
Pedro Juan Rodriguez-Fernandez, 16, Junior; Albert Joel Colon-Gonzalez, 17, Junior, University Gardens High School, San Juan, Puerto Rico, T: Pablo Javier Hernandez-Garcia

San Juan, TEPR12, Puerto Rico Metropolitan Science Fair

CH028 Analysis of Performance and Effectiveness of Biodiesel Produced by Methanol
Andre Hernandez-Espiet, 16, Junior, Escuela Secundaria Especializada en Ciencias, Matematicas y Tecnologia (CIMATEC), Caguas, Puerto Rico, T: Milagros Carire

EM025 The Use of Algalization by Inoculating Nostoc Commune Algae as an Important Resource for the Sustainable Management, Agricultural Systems and Environment Conservation
Andrea Marie Albaladejo, 15, Sophomore, Brigida Alvarez Rodriguez, Vega Baja, Puerto Rico, T: Elsie Garcia Allende

ME089 Molecular Characterization and Screening of Metabolic Diseases Ornithine Transcarbamoylase Deficiency (OTC) and Citrullinemia (CIT) Among Puerto Ricans
Andrea Monique Rivera-Corona, 17, Senior, Escuela Secundaria Especializada en Ciencias, Matematicas y Tecnologia (CIMATEC), Caguas, Puerto Rico, T: Shirley Marie Martinez

QATAR

Doha, QAT001, The National Student Research Fair

BE312 The Effect of Developing a Multilingual Cell Phone Application Based on Voice Search to Meet the Satisfaction of the Islamic Art Museum Visitors
Abdulla Mohammed Alrumaihi, 15, Sophomore; Thamer Al-Mass Al-Khatter, 15, Sophomore; Nasser Khalid Alyafei, 15, Sophomore, Jassim Hamad Independent Secondary School for Boys, Doha, Qatar; T: Tamer Bahgat Elserwy

CH312 Recycling Sugary Remnants to Produce Ethanol
Abdulaziz Fadala Al-Sulaiiti, 16, Junior; Abdulaziz Abdulla Shams, 16, Junior; Majid Abdulsheesh E. Ahmednooh, 16, Junior, Qatar Technical, Doha, Qatar, T: Hesham Fouad Mohamed
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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Authors</th>
<th>School/University</th>
<th>Contact</th>
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<tr>
<td>EE325</td>
<td>Development of Environment-Friendly Car Model that Generates Electric Energy</td>
<td>Ibrahim Ismail Kenawy, 16, Junior; Yousef Mohammed Al-Jabir, 16, Junior; Mina Botros, 17, Junior; Tariq Bin Ziyad</td>
<td>Independent Secondary School, Doha, Qatar, T: Hassan Elsayed Mansour, Hassan Elsayed Mansour</td>
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<tr>
<td>EM322</td>
<td>Cleaning Streets by Using Solar Energy</td>
<td>Saleh Abdulssalam Saleh Al-Safri, 15, Junior; Salum Hussain S.A. Al-Shamari, 15, Junior; Talal Rodayman H A Al-Shamari, 15, Sophomore, Shahanyak, Doha, Qatar, T: Saad Foudad Fahmu</td>
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<td>EM323</td>
<td>Marine Platforms: Scientific Ways of Protection from Oil Sea Pollution (Sealant Oil Device)</td>
<td>Abdullah Hassan Alsafar, 17, Junior; Hamad Khalid Al-Thani, 17, Junior; Gaffar Kamaledin Abbas, 16, Junior; Gameel Kateem Alshemary, Doha, Qatar; Jameel Kateem Al Shemary, Doha, Qatar, T: Zakareya Ahmed Hussein</td>
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<td>RECOL</td>
<td>Chisinau, MDA001, Moldova Science and Engineering Fair</td>
<td>Chisinau, Republic of Moldova, T: Sergiu Corlat</td>
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<tr>
<td>CS010</td>
<td>FlyPy: Embedding a Compiled Language into an Interpreted One to Get Maximum Performance</td>
<td>Dumitru Savva, 17, Junior, &quot;Orizont&quot; Lyceum, Chisinau, Republic of Moldova, T: Sergiu Corlat</td>
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<td>CS084</td>
<td>Voice Integrated Development Environment for People Who Are Blind, Myopia Affected or Have RSI</td>
<td>Diana Marusic, 16, Sophomore, Theoretical Lyceum &quot;Ion Creanga&quot;, Chisinau, Republic of Moldova, T: Iurie Marusic</td>
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<td>PS305</td>
<td>Healthy Grapevines without Heavy Metals</td>
<td>Anastasia Jeleznii, 16, Sophomore; Dimitrie Ginju, 15, Freshman, &quot;Mihai Marinciuc&quot; Lyceum, Chisinau, &quot;Mihai Marinciuc&quot; Lyceum, Chisinau, Republic of Moldova, T: Gheorghe Ginju</td>
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<td>ROMANIA</td>
<td>Suceava, ROM001, Romania Science and Engineering Fair</td>
<td>Stefan Dascalu, 17, Junior; Octavian Coca, 17, Junior, Colegiul National &quot;Petru Rares&quot; Suceava, Suceava, Romania, T: Anca Greculeac</td>
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<td>BE302</td>
<td>Games of the Future: Brainwave-controlled Devices</td>
<td>Daniel Cosovanu, 18, Junior, Tomsa Voda Technological High School, Solca, Romania, T: Ilie Cosovanu</td>
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<td>EM002</td>
<td>Solar Hot Air Generator Construction and Applicability</td>
<td>Daniel Cosovanu, 18, Junior, Tomsa Voda Technological High School, Solca, Romania, T: Ilie Cosovanu</td>
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<td>EN304</td>
<td>The Spider Is Changing the Game in the Building Industry</td>
<td>Alexandru Stefan Iov, 17, Junior; Alexandru Mihai Glontaru, 17, Junior, Tudor Vianu National High School of Computer Science, Bucharest, Romania, T: Dan Milici</td>
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<td>RUSSIAN FEDERATION</td>
<td>Chernogolovka, RUS005, Avangard</td>
<td>Chisinau, Republic of Moldova, T: Sergiu Corlat</td>
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<td>AS306</td>
<td>Three New Species of the Genus Novophytoptus roivainen 1947 (Acariformes, Eriophyoidae) from Russia, Serbia and USA</td>
<td>Timofei Petrushenko, 15, Sophomore; Valentina Ruazantceva, 16, Sophomore, Academic Gymnasium of Saint-Petersburg State University, Saint-Petersburg, Russian Federation, T: Philip Chetverikov</td>
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<td>CH025</td>
<td>Dendritic Polymers as a Modifier of Chromatographic and Electrophoretic Systems in the Determination of Vitamin and Amino Acids</td>
<td>Alina Bogdanova, 17, Junior, Academic Gymnasium of Saint Petersburg State University, Petergof, Russian Federation, T: Anna Kartsova</td>
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<td>CS045</td>
<td>Using the Fractal Dimension to Diagnose Cancer</td>
<td>Nataliya A. Koryavka, 16, Sophomore, Municipal Budget Educational Institution &quot;Lyceum No 3&quot;, Sarov, Russian Federation, T: Igor Stolyarov</td>
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<td>CH053</td>
<td>New Approach to the Block Synthesis of Alginate Fragments: The Molecular Geometry and Stereo Selectivity of the Mannuronyl Donors</td>
<td>Ekaterina Kutsenok, 17, Senior, Moscow Chemical Lyceum No. 1303, Moscow, Russian Federation, T: Dmitry Argunov</td>
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<td>CH317</td>
<td>Design of Novel Poly(oximinoalkyl) Amines and their Applications in Catalysis</td>
<td>Valentin Sergeevich Dorokhov, 17, Junior; Daniil Patriotich Agababyan, 16, Sophomore, Moscow Chemical Lyceum No. 1303, Moscow, Russian Federation, T: Artyom Semakin</td>
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EN067  Development of Access to Unconscious Feelings in the Field of Neurobiological Physiology: By Means of Detection of REM Sleep
Oleg Kochankov, 18, Freshman, Lyceum #15, Sarov, Russian Federation, T: Marina Makeeva

MA056  Cohomology of Finite Groups without Homological Algebra
Nikolai Mostovskii, 16, Junior, The Laboratory for Continuous Mathematical Education, St.Petersburg, Russian Federation, T: Sergei Ivanov

PH079  Negative Radio Components
Oleg Novikov, 17, Junior, Advanced Educational Scientific Centre, A.N. Kolmogorov Boarding School, Moscow, Russian Federation, T: Konstantin Dmitriev

EN033  Laser Speckle-Contrast Imaging: Bloodflow Mapping
Vsevolod Evgenyevich Fomin, 17, Junior, Lyceum No.40, Nizhny Novgorod, Russian Federation, T: Pavel Andreevich Shilyagin

CS030  Android2Mouse
Arseny Kirillovich Nerinovskiy, 17, Junior, Peterhof Gymnasium of Emperor Alexander II, Saint-Petersburg, Russian Federation, T: Dmitry Dmitrievich Guschin

CS063  SocialGrid: Utilising Power of Social Networks for Distributed Computing
Aleksandr Goncharov, 17, Junior, Laboratory of Continuous Mathematical Education, Saint-Petersburg, Russian Federation, T: Vasily Dyachenko

CS311  Laser 3D Scanner
Daniil Velovatyi, 16, Sophomore; Maksim Khivintsev, 16, Sophomore, Municipal Budget Educational Establishment of Novosibirsk “Gymnasium No.1”, Novosibirsk, Russian Federation, T: Ilya Belikov, Ilya Belikov

PH042  Research on Solidifying Liquid Drops
Alexey Smirnov, 17, Junior, Advanced Educational Scientific Centre, A.N. Kolmogorov Boarding School, Moscow, Russian Federation, T: Konstantin Parfenov

SAUDI ARABIA
Riyadh, SAU001, Mawhiba Science & Engineering Fair

BE028  The Effect of Innovative Colors Learning Method on Students with Learning Difficulties
Fahed Gassem Ghazwani, 17, Senior, Alrawdha, Jazan, Saudi Arabia, T: Ahmed Zelai

BI030  The Effects of Linking Multi Drugs with Silica Nanoparticles Coated with Silver Nanoparticles to Effectively Treat Tuberculosis
# Hassan Nezar Khdary, 17, Senior, Manarat AlRiyadh, Riyadh, Saudi Arabia, T: Ibrahim Almahdi
CB035  Hepatitis C Genotype 4 NS5A Protein: A New Study Determining Combination Therapy Drug Resistance in Saudi Patients
Abdullah Ahmed AlTorbag, 18, Senior, Complex Prince Sultan Gulf School, Burydah, Saudi Arabia, T: Abdulnasser Alyahya

CH030  The Effectiveness of Guanidine Functionalized Polymers in Carbon Dioxide Capture and Utilization
Sarah Hasan Al Abdullatif, 17, Senior, Dhahran Ahliyya Schools, Dammam, Saudi Arabia, T: Maha AlOmair

EM028  Improving Seawater Membrane Distillation: The Development of Carbon Nanotube-coated Nickel Hollow Fiber Membranes
Farah Essam Almulla, 17, Junior, Dhahran Ahliyya Schools, Dammam, Saudi Arabia, T: Maha AlOmair

EM029  Red Sea Ecosystem: A Novel Study to Determine Phytoplankton Diversity during Mesocosm Blooms
Haifa Hammad Al-Belaihid, 17, Senior, Al-Tarbia Alislamia Schools, Riyadh, Saudi Arabia, T: Hanaa Sahyon

EM030  Removal of Algal Material Using Coagulation-Flocculation-Decantation
Najla Salih Aljabr, 17, Senior, Prince Mohammed Bin Fahad Complex, Dammam, Saudi Arabia, T: Huda Abu Bushait

EN040  A Novel Optimization Technique Using Hydrophilic POSS-PEO Nanoparticles and PSU-PEO Block Co-polymers on Hydrophobic Polysulfone Membranes
Ahmed Sami Kayat, 17, Senior, Dawerd Secondary School, Dhadmi, Saudi Arabia, T: Faisal Alzaydi

EN041  Optimization of ZnO Electron-Selective Buffer Layers in Flexible Organic Photovoltaic Devices
Mohammed Fahmi Al Senani, 17, Senior, Riyadh School for Boys and Girls, Riyadh, Saudi Arabia, T: Lethy Lethy

EN319  Fabrication of Flexible Pressure Sensors Using MWCNTs Nanocomposites Material
Osaid Ibrahim Ali, 17, Senior; Muhammad Alwaleed Aljaali, 16, Junior, Alansar High School, Madinah, Saudi Arabia; Ain Jaloud High School, Makkah, Saudi Arabia, T: Salman AlMashrafi, Ibrahim Alssadi

ET310  A Continuation Study on Petroleum Recovery Rates: Creating a Pickering Emulsion in Oil Reservoirs to Increase the Accuracy of 4D Seismic Surveys
Rund Essam Tawfiq, 17, Senior; Razan Sami Alfouzan, 17, Senior, Dhran School, Dammam, Saudi Arabia; Saad National School, Alkhobar, Saudi Arabia, T: Maha Al-Nazer, Maha AlOmair

ET311  Alternative Fuels for Future Engines: Investigating the Potential of FACE A, FACE C, and Farnasane as Novel Alternative Gasolines and Biofuels
Mohammed Abdulfattah Aldajani, 17, Senior; Salam Hasan Alabdullatif, 17, Senior, Dhahran Ahliyya Schools, Dhahran, Saudi Arabia; Dhahran Ahliyya Schools, Dhahran, Saudi Arabia, T: Fayeg Algaderi, Mahesh Balaraman

ME066  The CYP2C19 Polymorphisms in Saudi Population: Clinical Response to Clopidogrel in Coronary Artery Disease
Abdulkareem Hmoud Alharbi, 18, Senior; Manarat Riyadh Schools, Riyadh, Saudi Arabia, T: Hamsa Tayeb

ME067  Fighting for the Orange Ribbon: Acute Myeloid Leukemia Type-3 Differentiation Triggered by Cisplatin
Jumanah Marwan Alsawaf, 16, Senior, Dar Alfiker School, Jedda, Saudi Arabia, T: Jasmeen Merzaban

ME068  Determining the Effect of Red Sea Sponge: Associated Bacteria against HIV-1 Integrase and HeLa Cancer Cell Line
Hajar Adel Alreffi, 17, Senior, AlTarbyah Alislamiah, Riyadh, Saudi Arabia, T: Hanaa Sahion

MI312  Ralstonia metallidurans to Produce Gold Alongside Other Rare Metals
Abduljabbar Abdulraz Alhamood, 17, Junior; Razi Ali Alalqam, 16, Junior, Dhahran Ahliyya School, Dhahran, Saudi Arabia; T: Hamza Naeem

PS029  Estimation of Genome Size and Ploidy Level in Salicornia Species for Understanding the Extent of Genetic Variation
Mariyah Tariq Bashawri, 17, Senior; AlBassam Schools, Dammam, Saudi Arabia, T: Manar Al-Tantawy

PS033  RNA-Guided Genome Editing in Arabidopsis thaliana Using CRISPR/CAS9
Nadine Mahdi Almadani, 17, Junior, Dahran School, Dammam, Saudi Arabia, T: Maha AlOmair
SINGAPORE
Singapore, SGP001, Singapore Science and Engineering Fair

CB301 Screening for Genetic Polymorphism in GRIN2B Gene in Patients Diagnosed with Bipolar Disorder
Jun Yi Ong, 17, Senior; Jeremy Jin Quan Goh, 17, Senior, NUS High School of Mathematics and Science, Singapore, Singapore, T: Hock Chun Tang

EE303 Solid State Fan
Eliot Lim, 17, Senior; Shiyang Yu, 17, Senior; Zhong Liang Ou Yang, 18, Senior, NUS High School of Mathematics and Science, Singapore, Singapore, T: Sher-Yi Chiam

EN009 Characterisation and Engineering of Squid Sucker Ring Teeth Polymer Proteins
Dousabel May Yi Tay, 17, Senior, NUS High School of Mathematics and Science, Singapore, Singapore, T: Kai Leng Low

EN010 Give a Hand: Designing and Developing a Neuroprosthetic Hand
Vanessa Yun Han Tan, 17, Senior, Dunman High School, Singapore, Singapore, T: Leong Howe Tan

ET014 Nature Derived Carbon Microsheets as Efficient Electrocatalyst for Energy Storage
Shannon Xinjing Lee, 17, Senior, National Junior College, Singapore, Singapore, T: Sheryl Si Ling Ang

MI009 Improved Multiplexed Automated Genome Engineering through Directed Evolution
Mark Kit Lim, 17, Senior, Raffles Institution, Singapore, Singapore, T: Guoxian Tan

SLOVAKIA
Bratislava, SVK001, Scientia Pro Futuro

CS064 Artificial Intelligence: Evolution and Genetic Algorithms
Pavel Madaj, 18, Junior, Gymnazium V. B. Nedozerseho, Prievidza, Slovakia, T: Olga Kurbelova

PH311 Study of Two-dimensional Melting in a System of Small Magnets
Martin Liscinsky, 18, Senior; Michal Geci, 18, Senior, Gymnazium Svatoho Tomasa Akvinskeho, Kosice, Slovakia, T: Maria Svikova

Bratislava, SVK002, AMAVET-Slovak Association for Youth, Science & Technology

BI049 Study of Binding Modes of Synthetic Coumarin Derivates with DNA and Albumin
Daniel Ondra, 18, Senior, Gymnazium Kosice, Kosice, Slovakia, T: Zuzana Kolesarova

ME096 Lipoproteins as a Vehicle for Targeted and Selective Delivery of Hydrophobic Drugs to Cancer Cells
Kristina Ulincna, 18, Senior, Gymnazium Krompachy, Krompachy, Slovakia, T: Jana Legartova

PH065 On Tycho Supernova Remnant Accelerating Cosmic-rays
Michaela Brchnelova, 17, Junior, High School of Jura Hronca, Bratislava, Slovakia, T: Matej Gonda

PH066 Fabrication of Platinum Catalyst Nanoparticle Arrays
Branislav Viliam Hakala, 17, Junior, Evanjelické Gymnázium Jána Amosa Komenského, Kosice, Slovakia, T: Eva Lejkova

SOUTH AFRICA
Boksburg, ZAF001, Expo for Young Scientists - South Africa

BE022 Investigation into Whether Teenagers Read Faster and Retain More Information When Tested Using Various Media
Matthew Daniel Symon, 16, Junior, Herzlia High School, Cape Town, South Africa, T: Lance Job

CS041 A Novel Approach to Biometric Identification Using an Iris Scanner
Sophia Demetriou, 18, Senior, Selly Park Secondary Convent, Rustenburg, South Africa, T: Heidi Lowe

CS308 Ally: A Novel Approach to Online Password Generation
Kgothatso Molemi, 17, Senior; Thapelo Nthite, 17, Senior, Lebone Il College, Phokeng, South Africa; Lebone Il College, Phokeng, South Africa, T: Lieze Prins

EA012 Using an Underwater Trench to Limit the Energy of a Tsunami
Boyd Robert Kane, 16, Sophomore, Bishops (Diocesan College), Cape Town, South Africa, T: Olga Peel

EE044 The Intelligent Energy Saving Power Strip
Neil Fair, 17, Junior, Pretoria Boys High School, Pretoria, South Africa, T: Awie Duvenage

EE045 A Vibrating Device to Assist Visually Impaired Athletes
Jason Benjamin, 18, Freshman, South Peninsula High School, Cape Town, South Africa, T: Zeid Baker
ET037  **Utilizing Pine Cone Briquettes as an Alternative Energy Source**  
Lungelo Don Clarcence Sigudla, 16, Junior, Newcastle High School, Newcastle, South Africa, T: M. Liebenburg

ET039  **Green Algae as a Viable Substrate in a Microbial Fuel Cell**  
Thesan Appalsamy, 16, Junior, Greenbury Secondary, Durban, South Africa, T: Logan Pillay

ME049  **Evaluation of Balance Skills in Male Subjects Aged 6–7 Years**  
Romy Talia Bloch, 16, Junior, Herzlia High School, Cape Town, South Africa, T: Dana Katz

MI034  **Utilizing UV-rays to Eradicate Micro-Organisms on Healthcare Workers Cellular Phones to Prevent Cross-Infection**  
Toni-Ann Black, 15, Sophomore, Roedean School, Johannesburg, South Africa, T: Andria Eberson

PH033  **Investigating a Relationship between Coronal Mass Ejections and the Solar Sun Spot Cycle**  
Justin Michael Boyce, 18, Senior, St Johns College, Johannesburg, South Africa, T: Colleen Henning

**SOUTH KOREA**

_Daejeon, KOR003, Korea Science Fair_

CB303  **Search for MICA Expression Controlling miRNA in A549 Lung Cancer Cells**  
Ji Wook Kim, 18, Senior; Hyunwoong Kim, 17, Senior, Korea Science Academy of KAIST, Busan, South Korea, T: Jaeho Bae

EE049  **Midemi Weather Capsule**  
Young-Woon Song, 17, Senior, Daegu Science High School, Daegu, South Korea, T: Jungu Lee

EM022  **Extraction of Bio-Ethanol from Rice Straw and Utilization of Rice Straw Residues or Animal Feeding**  
Junghyun Chae, 16, Junior, Seocho High School, Seoul, South Korea, T: Chanhees Chae

ET042  **Bumping & Reversing Wave Energy Generating System (BRES): Energy Generating System with Often Wasted Wave by Applying Principle of Interference and Rip Current**  
Chan Lee, 16, Junior, Kyunggi High School, Seoul, South Korea, T: Min Sin

MI310  **Production of Bioplastic by a Bacterium Isolated from Waste Treatment Facility (from Lignocellulosic Glucose, Abundant Sucrose, Byproduct of Biodiesel & Spent Coffee Grounds Extract)**  
Gi Na Lee, 18, Senior; Dong Il Je, 17, Senior, Korean Minjok Leadership Academy, Hoengseong-gun, South Korea, T: Jong Uk Na

PH308  **Weakening Fire Vortex Using Symmetry Breaking Method**  
Jeong Hyun Kim, 17, Senior; Da Weon Hwang, 17, Senior; Min Ki Kim, 16, Senior, Daegu Science High School, Daegu-si, South Korea, T: Yong Soon Kim

_Seoul, KOR001, Korea Olympiad in Informatics_

CS043  **Plantation Improvement Simulator**  
Juyeong Jeong, 17, Senior, Hwawon High School, Daegu, South Korea, T: Ji-Yeong Kim

CS048  **Game for Visually Impaired with 3D-Sound**  
Joonsung Kim, 15, Sophomore, Korea Digital Media High School, Ansan-si, South Korea, T: Minju Lee

CS049  **Real-time Poll System Using Cumulative Voting System**  
Ji-Seok Ryu, 14, Freshman, International Pioneer Academy, Amman, Jordan, T: Byeong-Seon Park

CS309  **Automated Digital Comics Reading System Based on Image Processing**  
Jaeyoon Kim, 18, Senior; Dahyun Kang, 16, Senior, Korea Science Academy of KAIST, Busan, South Korea, T: Hyunwoo Jung

PH313  **Paper Pack’s Curving Tracking Path Analysis and Its Application Suggestion**  
Junseok Son, 17, Senior; Bihan Hwang, 17, Senior; Dong Geun Lee, 18, Senior, Garim High School, incheon, South Korea, T: Sangheon Lee

_Seoul, KOR002, YSC (National Science Research Competition)_

EE313  **Efficient Plant-Based Solar Array**  
Kyeong Jin Han, 16, Junior; Myung Won Oh, 16, Junior; Kyoung Min Woo, 17, Junior, Gyeongnam Science High School, Jinju, South Korea, T: Pal Hong Lee

EE330  **Development of a Muscle Rigidity Measurement System for an Early Diagnosis of Parkinson’s Disease**  
Hyeongkeun Lee, 17, Senior; Sangjin Yun, 17, Senior, Korea Science Academy of KAIST, Busan, South Korea, T: Heecheon You
EM314  Design of ‘Worm-drum’ Using Pectin and Activated Carbon Filter
Surim Kim, 17, Senior; Yerin Na, 17, Senior; Serin Lee, 17, Senior, Korea Science Academy of KAIST, Busan, South Korea; T: Jinho Oh

EN316  Enhancing the Efficiency of CO₂ Recycling by Using Visible Rays with Natural Dyes
Junhyung Park, 16, Junior; Hyeonji Kwon, 16, Junior; Nanyoung Kim, 16, Junior, Daegu II Science High School, Daegu, South Korea; T: KyungHee Jeon

EN317  Making New Eco-Friendly Painting Powder Using Plants
# Ju-Eun Sim, 16, Junior; Eun Jo Kim, 16, Junior; Yumin Kim, 16, Junior, Gyeongnam Science High School, JinJu, South Korea; T: Pal Hong Lee

EV313  Use of Lichens as Indicators of Air Quality in Jeju Island, Korea
Minseong Go, 16, Junior; Hyeon Woo Song, 16, Junior; Jeongin Kang, 16, Junior, Namnyeong High School, Jeju-si, South Korea; T: Jong Moon Lee, Jong Lee

PH306  Making Simple Korean Traditional Musical Instrument (Pyeon-gyeong) Using Ceramic
Chaeenun Song, 17, Senior; Seonmi Lee, 17, Senior; Jisoo Yu, 17, Senior, Incheon Sangok High School, Incheon, South Korea; Incheon Sangok High school, Incheon, South Korea, T: Yuhee Shin

SPAIN

EV319  Prevention of Acid Rain Effects with Sacrificial Metals and Development of a Detection System
Queila Bouza Peteiro, 17, Junior; Jorge Cordero Bermudez, 17, Junior; Miguel Gomez Cid, 17, Junior, Schools: Aulas Tecnopole, Ourense, Spain, T: Carlos Perez Freire

SRI LANKA

CS023  Artificial Intelligence Sense for the Blind to Play Video Games Using Their Tongue
# Liyanadura Nipun Kavishka Silva, 15, Junior, De Mazenod College, Kandana, Sri Lanka, T: Kalinga Mudalige Pradeep Amil a Hasantha Perera

EE029  Versatile Field Construction Machine for Paddy Cultivation
Wijesuriya Arachchilage Namal Udara Piyasiri, 18, Senior, Bellankadawala Maha Vidyalaya, Thambuththegama, Sri Lanka, T: Subasinghe Mudiyanselage Nalinda Sampath Siriwardhana

SWEDEN

CS070  Algorithm for Machine Reading
Axel Wilhelm Linnert Ericsson, 18, Senior, Viktor Rydebergs Gymnasium Odenplan, Stockholm, Sweden; T: Mats Nyberg

MA048  Calculations on Randomness Effects on the Business Cycle of Corporations through Markov Chains
Christian Holm, 18, Senior, Procvitas Privata Gymnasium Helsingborg, Helsingborg, Sweden, T: Mikael Bjorklund

ME097  What Effect Do Goji Berries Have on the Viability of Alzheimer's Sick Drosophila melanogaster?
Alexandra Svenssson, 18, Senior, Katedralskolan in Linkoping, Linkoping, Sweden, T: Maria Forsberg

SWITZERLAND

BI027  An Innovative Research about Reynoutria japonica (Houtt.): Distribution, Biochemical Analysis and Therapeutic Perspectives
Stefan Milosavljevic, 20, Senior, Liceo Cantonale Lugano 1, Lugano, Switzerland, T: Luca Paltrinieri
THAILAND
Bangkok, THA001, National Science Projects Competition

CH045  Fluorescence Sensor Based on Quenching of Curcumin for the Determination of Heavy Metal Ions
        Panitan Thakhiew, 17, Senior, Kaennakhon Wittayalai School, Khonkaen, Thailand;
        T: Pornsawan Kotama

EE333  Efficiency Development of Air Boat Model Movement Using Angular Velocity Measure
        # Chaleampon Photearm, 18, Senior; Issariya Boonjang, 18, Senior, Princess Chulabhorn's College
        Lopburi, Lopburi, Thailand; T: Warin Jongtan

MA036  N-gon with the Maximum Area for Equal Length of Perimeter
        Sathaporn Insan, 17, Junior; Ronnakrit Panphom, 17, Junior; Pitipong Suwanmaneechot,
        17, Junior, Nakhon Sawan School, Nakhonsawan, Thailand; Nakhonsawan School, Meung,
        Thailand; T: Samai Chanleung, Samai Chanlueng

PS319  Novel Strategy for Controlling Population of Pest Snails Using Plant Extracts
        Pattarapong Limpawattana, 16, Freshman; Wanta Kamlang, 16, Sophomore, Phanomsarakham
        "Phanom Adun Witthaya" School, Chachuengsao, Thailand;
        T: Sukklaya Wongyai

Bangkok, THA002, Young Scientists Competition

AS309  Repellent Effects of Lamiaceae Plant Extracts on Paederus fuscipes Beetles and Inhibitory Effects of Lime Fruit Oil on Paederus dermatitis
        Vachana Chongrujipinyo, 16, Sophomore; Chisanu Thumarat, 17, Junior; Boonyakorn
        Assavanives, 17, Junior, Bangkok Christian College, Bangkok, Thailand; T: Chanan Keatsirisart

CS319  A Heart-Rate-Controlled Animated Exercise Trainer Using Neural-Network-Based Adaptive Control
        Thitaree Tanprasert, 17, Junior; Teerapaun Tanprasert, 14, Freshman, Samsenwittayalai
        School, Bangkok, Thailand; Samsenwittiyalai School, Bangkok, Thailand;
        T: Thitipong Tanprasert

EM326  Zero-Waste Management for Spent Bleaching Earth: A Study of Its Reuse and Regeneration
        Papitchaya Rongdejpratheep, 17, Junior; Marisa Techasontichai, 17, Junior, Mahidol
        Wittayanusorn School, Nakhon Pathom, Thailand; T: Usa Jeenjenkit

EM327  Development of Composite Fiber for Oil Removal in Waste Water
        Yanudchara Nuanpan, 16, Junior; Jakrapop Nopparat, 18, Junior; Khattiyaporn Tiprongpon,
        17, Junior, Princess Chulabhorn's College Nakhon Si Thammarat, Thailand;
        T: Jiratha Kongkaew

ME314  Development of Pollen Allergens Specific IgE Detection in Allergic Patient through the ELISA Technique
        Chana Chaovanitkul, 16, Junior; Sasipach Wattanaparakarnchait, 17, Junior; Kwansiri
        Kraraweeengarmwijitr, 17, Junior, Mahidol Wittayanusorn School, Nakhon Pathom, Thailand;
        T: Nitikarn Kim-Ing

TUNISIA
Tunis, TUN001, Tunisia Science and Engineering Fair

CS011  A Novel Method for Melanoma Skin Cancer Diagnosis at an Early Stage Using ANN and DNA Analysis
        # Alaa Amri, 17, Junior, Pioneer High School of Gabes, Gabes, Tunisia; T: Mohammed Ali Daymi

CS012  Using Artificial Intelligence and Computer Vision in Creating an Operating System for Head- Mounted Displays
        # Nebras Nabil Djemel, 17, Senior, Pioneer High School of Gabes, Gabes, Tunisia;
        T: Mohammed Ali Daymi

EE017  Implementation of an FPGA Based Real-time Assistance System for Blinds
        Ghaith Allah Chebil, 17, Junior, Monastir Pioneer Junior Secondary School, Monastir, Tunisia;
        T: Rafik Tekaya

TURKEY
Ankara, TUR002, Tubitak Fair

BE046  Analyzing High School Students' Perceptions of Education System through Metaphors
        Irmak Su Tutuncu, 17, Senior, Cengiz Aytmatov Sosyal Bilimler Lisesi, Izmir, Turkey;
        T: Songul Karakus
CB307  The Influence of Y Matter Derived from Egg Yolk Oil on Liver Cancer (Hepatocellular carcinoma) Cells
Ahmet Resul Karababa, 17, Senior; Hazal Kayginer, 17, Senior; Sivas Fen Lisesi, Sivas, Turkey,
T: Sadi Sezginer

CB308  Placental Stem Cell Production using Milk and Whey Nutrients: Genetic Testing for Multipotency
Bircan Boga, 16, Junior; Merve Akbulut, 16, Junior, Adana Final High School, Adana, Turkey,
T: Nermin Yazicioglu

CH052  The Synthesis of Thiophene Derived Conductive Copolymer and the Analysis of the Properties of Electrochromic Devices
Busra Ban, 18, Senior, Cakabey Schools, IZMIR, Turkey, T: Dilek Solak

EE337  Target Designation with Infrared Laser and Tracking System
Mustafa Erdogan, 20, Senior; Omer Ozbekler, 19, Senior, Deniz Harp Okulu Komutanligi, Istanbul, Turkey, T: Kemal Kaymak

MA307  Deriving Some Trigonometric Identities and Inequalities in Triangles Using Vieta's Theorem
Inal Ergun, 16, Junior; Yunus Tuncbilek, 17, Senior, MEF High School, Istanbul, Turkey;
Ataturk High School of Science, Istanbul, Turkey, T: Ipek Dulundu

MA308  Bracelet Problem with Identical Beads
Ata Aydin Uslu, 18, Senior; Hamdi Gökta Özmenekse, 18, Senior, Edirne Süleyman Demirel Fen Lisesi, Merkez/Edirne, Turkey; Edirne Süleyman Demirel Fen Lisesi, Edirne, Turkey,
T: Murat Sahin

PH080  Capturing Fingerprint Using a Simple Laser Marker and a Mobile Phone
Dilem Coklu, 17, Senior, Milli Egitim Vakfi Private Ankara Science High School, Ankara, Turkey,
T: Gulay Olmez

PH316  A Low-Cost and High-Temperature Vibrating Sample Magnetometer
Mehmet Ege Karaesmen, 18, Senior; Ahmet Berk Selvi, 18, Senior, Takev Ozel Anadolu Lisesi, Izmir, Turkey, T: Ruhsah Ayse Erduygun

PH317  Ultrasonic Sound Tunnel
Ali Kaan Ergun, 18, Senior; Alibey Delimustafaoglu, 18, Senior, Melikgazi Mustafa Eminoglu Anatolian High School, Kayseri, Turkey, T: Ferhat Cekim

ISTANBUL, TUR001, 12th National Environmental Project Olympiad

EN328  Improving the Efficiency of TiO2 Thin Film-Based Solar Cells by Changing the P3HT: PCBM Ratio and their Characterization
Hilmi Oguzhan Ayan, 16, Junior; Hasan Fatih Turkgenc, 16, Junior, Ozel Istanbul Fatih Anadolu Lisesi, Istanbul, Turkey, T: Turan Tekin

UKRAINE

Kyiv, UKR001, Intel-TechnoUkraine

CS028  Manipulated “Holograms”: Fantastic Becomes Real
Oleksandr Loyko, 17, Junior, Kyiv Gymnasium #48, Kyiv, Ukraine, T: Mykola Goncharuk

CS029  3D Education World: Learning, Motivation, Communication
Victor Dorokhin, 17, Junior, Alushta Public School #2, Alushta, Ukraine, T: Sergey Kovalev

MA020  Facility Location Problems and Non-Leibniz Analysis on Complex Plane
Oleksandr Tytov, 16, Junior, School-Lyceum #3 Named After A. S. Makarenko, Simferopol, Ukraine, T: Sergiy Ivanovich Jidkov

Kyiv, UKR002, Intel - EcoUkraine

CB018  Functions of BldD Respressor in Teicoplanin Producer Actinoplanes teichomyceticus
Kseniya-oksana Zhukrovska, 17, Junior, Lviv Academic Gymnasium at the National University “Lviv Polytechnical”, Lwiv, Ukraine, T: Oleksandr Yushchuk

ET057  Wave-Powered Desalinator
Mykhailo Lytvovenko, 16, Sophomore, Dnipropetrovsk Chemical Ecological Lyceum, Dnipropetrovsk, Ukraine, T: Yuriy Lytvovenko

MIO24  Elucidation of the Deterministic Properties of the Optimal Probiotic Microorganisms
Arseniy Gordeychyk, 15, Sophomore, Kiev Public School #80, Kiev, Ukraine,
T: Lubov Sheremetova
FINALIST DIRECTORY

UNITED ARAB EMIRATES

**Ch316** The Use of Bacteria from Soil of Sweihan Area to Clean up Wastewater
- Khalifa Saleh Almheiri, 16, Junior; Mohammed Mubarak Almheiri, 16, Junior; Mohammed Ali Almazroouei, 16, Junior, Sweihan School, Al Ain, United Arab Emirates, T: Abdeltawab Mohamed Ali

**EE335** Self-cleaning Solar Panels
- Eman Abdulrahman Al Marzooqi, 16, Junior; Fatima Muhayer Al Ketbi, 16, Junior; Rahaf Taher Albreiki, 15, Junior, Applied Technology High School-Al Ain-Girls, Al Ain, United Arab Emirates, T: Rasha Khaleel Noufal

**ET316** Eyes on Road
- Ayesha Abdulrazak Al Ali, 17, Senior; Mira Humaid Alansari, 17, Senior, Dubai National School, Dubai, United Arab Emirates, T: Nafissa Mustafa El Jabban

**ET317** DatEnergy: Exploitation of Palm Waste

**ET318** Multi-Purpose Exercise Machine
- Mohamed Hassan Al Dhanhani, 14, Sophomore; Mohamed Saeed Al Zarooi, 15, Sophomore, The Glenelg School of Abu Dhabi, Abu Dhabi, United Arab Emirates, T: Mohamad El Sayed Desouky, Mohammad Desouky

**EV316** Grains of Gold
- Shamma Faisal Al Bastaki, 17, Senior; Hayat Abdulredha Abu Alhassan, 16, Senior, Al Ittihad Private School-Jumeira, Dubai, United Arab Emirates, T: Sadek Anwer Sheetah

UNITED KINGDOM

**EE054** DrownGuard: Automatic Drown Alarm for Lifeguards
- Dominic Blythe, 17, Junior, Nottingham High School, Nottingham, United Kingdom, T: Paul Gray

**EE091** TapioTrack Satellite Tracker
- Daniel Saul, 17, Senior, Sutton Grammar School, Sutton, United Kingdom, T: Jamie Costello

UNITED STATES OF AMERICA

ALABAMA

**BE024** “Are You Sure?” A Multi-Factor Analysis: Are Eyewitness Testimonies Dooming the Innocent?
- Ansley Elizabeth Lynn, 16, Sophomore, Glenwood School, Smiths, Alabama, T: Chelsea McMeen

**MI030** Determining Antimicrobial and Synergistic Properties of Silver Coated Carbon Nanotubes and Antimicrobial Peptides against Streptococcus pyogenes
- Ruchir Rastogi, 16, Junior, Loveless Academic Magnet Program High School, Montgomery, Alabama, T: Komal Vig

**CH021** The Effect of α-Cyclodextrin on the Solubility of Methane into Water for the Formation of Clathrate Hydrates
- Hayden Elise Fowler, 18, Senior, Alabama School of Fine Arts, Birmingham, Alabama, T: Michael Hallman

**EE318** Renovated Cane to Aid Indoor Travel for the Visually Impaired
- Amber Elizabeth Gibson, 18, Senior; Billy Dalton Smith, 17, Senior; Isaac Daniel Searcy, 18, Senior, Hewitt Trussville High School, Trussville, Alabama, T: Chris Bond

**ME100** Cytochrome C Oxidase Activity and Chemoresistance
- Tahireh Markert, 17, Senior, Indian Springs School, Indian Springs, Alabama, T: Lisa Balazs

**CB034** Synthetic Biology Approach for Development of a Monosodium Glutamate Detector, Phase II
- Jodie Leigh Tinker, 17, Senior, Covenant Christian Academy, Huntsville, Alabama, T: Rhonda Lisauckis

**MI002** Development of a Novel Antimicrobial Polymer for Biomedical Applications
- Joshua Cyril Abreo, 16, Junior, James Clemens High School, Madison, Alabama, T: Robin Hodges
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<th>PH028</th>
<th>The Development of a Novel, Low Cost, High Power, Tunable UV Supercontinuum Laser Source</th>
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<td><strong>CB049</strong></td>
<td>Predicting Eye Color Genotype Based on Phenotype</td>
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<td>Madelyn Elizabeth Kloske, 15, Freshman, Pope John Paul II Catholic High School, Huntsville, Alabama, T: Brian Finzel</td>
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<tr>
<td><strong>EE079</strong></td>
<td>Hunka Hunka Hybrid Luv, Phase II: Design and Construction of a Multipurpose Scalable Power Electronics Module for Electric or Hybrid Electric Vehicles</td>
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<td>Drew Prevost, 16, Sophomore, Covenant Christian Academy, Huntsville, Alabama, T: Rhonda Lisauckis</td>
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<td><strong>EE332</strong></td>
<td>The Laser Harp-Inator</td>
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<td>Paul Boulet, 18, Senior; Andrew David Carlson, 17, Senior, Saint Peter's Academy, New Market, Alabama, T: Jon David Jackson</td>
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<td><strong>ME104</strong></td>
<td>A New Pathway for Alzheimer's Drugs: Modification of BACE1 to Decrease the Release of Beta Amyloid in the Brain</td>
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<td>Rahul Lall, 14, Freshman, Auburn Junior High School, Auburn, Alabama, T: Jacque Middleton</td>
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<td><strong>ME117</strong></td>
<td>Searching for the Fountain of Youth: Exploring the Relationship Between the Natural Phenol Resveratrol and Diet to Examine Longevity in Drosophila melanogaster</td>
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<td>Rachel Michelle England, 18, Freshman, School: Demopolis High School, Demopolis, Alabama, T: Brian Burns</td>
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<td><strong>Livingston, USAL05, West Alabama Regional Science Fair</strong></td>
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<td><strong>EE031</strong></td>
<td>Breaking Point</td>
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<td>Danika Louw, 14, Freshman, Holy Spirit Catholic High School, Tuscaloosa, Alabama, T: Deborah Samaniego</td>
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<td><strong>Mobile, USAL04, Mobile Regional Science Fair</strong></td>
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<td><strong>EE048</strong></td>
<td>More than a Feeling: A 3D Haptic Vest for the Visually Impaired</td>
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<td>Sean Alexander Benson, 17, Junior, Satsuma High School, Satsuma, Alabama, T: Judy Tapia</td>
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<td><strong>ET060</strong></td>
<td>Energy Harvesting via Pyroelectric Effect</td>
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<td>Rupa Palanki, 15, Freshman, WP Davidson High School, Mobile, Alabama, T: Srinivasa Palanki</td>
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<td><strong>ALASKA</strong></td>
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<td><strong>AS036</strong></td>
<td>Ichthyophonus vs. Proteins: Should We Be Eating These Fish?</td>
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<td>Alisa Rachael Aist, 17, Junior, Polaris K-12 School, Anchorage, Alaska, T: Andrea Evans</td>
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<td><strong>EN048</strong></td>
<td>Novel Lateral Flow Test Design to Detect the Presence of Paralytic Shellfish Poisoning</td>
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<td>Taylor Jade Seitz, 16, Junior, Polaris K-12 School, Anchorage, Alaska, T: Andrea Evans</td>
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<td><strong>Juneau, USAK01, Southeast Alaska Regional Science Fair</strong></td>
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<td><strong>AS007</strong></td>
<td>Genetic Differentiation of Capelin (Mallotus villosus) in the Bering Strait and Southeast Alaska</td>
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<td>Raven Ward, 14, Freshman, Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith</td>
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<td><strong>AS302</strong></td>
<td>Juvenile Chum Salmon (Oncorhynchus keta) Migration Timing through Icy Strait from Different Southeast Alaska Hatcheries</td>
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<td>Gabrielle Duvernay, 16, Sophomore; Anouk Otsea, 16, Sophomore, Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith</td>
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<td><strong>PS001</strong></td>
<td>The Effects of Distance from a Stream on the Abundance of Ten Lichen Genera in Riparian Habitats</td>
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<td>Madeline Handley, 16, Sophomore, Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith</td>
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<td><strong>AS048</strong></td>
<td>Effects of Lygus-specific Bacillus thuringiensis Insecticidal Proteins on Lygus &amp; Its Predators</td>
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<td>Gen Fitzgerald, 17, Junior, Desert Vista High School, Phoenix, Arizona, T: Birgit Musheno</td>
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<td><strong>BE314</strong></td>
<td>The Effect of Academic Rigor on Sociometric Status and Subjective Well-Being</td>
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<td>Aundrea Degravina, 17, Senior; Shea Van Slyke, 17, Senior, Hamilton High School, Chandler, Arizona, T: Debbie Nipar</td>
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</table>
Finalist Directory

BI052 Computational Analysis of the GABA(A) Receptor
Aakash Jain, 17, Senior, Brophy College Preparatory, Phoenix, Arizona, T: Patricia Mazier

CB305 Enabling Neural Regeneration in a Model of Glial Scarring: Implications of Enhancing Retinoic Acid Signaling and Regulating NG2 Expression
Tejas Dharmaraj, 16, Senior; Manav Sevak, 17, Senior, Chandler High School, Chandler, Arizona, T: Donna Bond

CS078 A Novel Approach to Genetic Interaction Research with an Integrated Repository of Gene Regulatory Networks
Shrey Gupta, 17, Junior, BASIS Scottsdale, Scottsdale, Arizona, T: Paul McClernon

EE078 An Innovative Approach to Improve Spin Polarization in Co2FeAl0.5Si0.5 Thin Films for Spin Transport Electronics
Sarah Nicole Galvin, 18, Senior, Corona del Sol High School, Tempe, Arizona, T: Steve Morgan

EM049 The Optimization of Compost Tea Formulations: A Plan for Future Sustainability of the Biosphere
Tapasya Trivedi, 15, Junior, Academy of Tucson High School, Tucson, Arizona, T: Kathy Friedman

ET058 The Effect of the Type of Chemical Solvent on the Amount of Crude Algal Oil Extracted for Biofuel Production
Kaitlyn Noel Loop, 16, Junior, Arizona College Prep - Erie, Chandler, Arizona, T: Kristi Glassmeyer

ET314 Wave Efficiency Converter Efficiency Enhancer: Adaptations to the Pelamis Device
Xingyu Yang, 15, Sophomore; Casey Suzanne Calhoun, 15, Sophomore, BASIS Scottsdale, Scottsdale, Arizona, T: Paul McClernon

ME093 The Forgotten Cancer: A Three-Pronged Approach: (1) MRI Analysis of Disease Localization, (2) Optimization of ZFN Therapy, (3) In vitro Implementation of ZFR Treatment
Viputheshwar Sitaraman, 16, Senior, Hamilton High School, Chandler, Arizona, T: Debbie Nipar

ME313 Elucidating the Mechanism of the Ketogenic Diet as an Effective Adjuvant Therapy for Malignant Glioma: A Multiphase Study to Characterize Alterations in Tumor-Associated Inflammatory and Growth Factor Signaling
Rajet Vatsa, 17, Senior; Claire Jayne Woodrow, 17, Senior, Brophy College Preparatory, Phoenix, Arizona; Xavier College Preparatory, Phoenix, Arizona, T: Patricia Mazier

MI068 Enzymes as Antivirals
Rebecca Jeanne Jernigan, 16, Junior, Hamilton High School, Chandler, Arizona, T: Debbie Nipar

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

ME311 Beauty or Beast: A Study of Microbial Growth on Artificial Nails in the Healthcare Field
Leah Dawn Gusjkolen, 17, Senior; Ashleigh Dawn Fraser, 17, Senior, Willcox High School, Willcox, Arizona, T: Ty White

Tucson, USAZ03, Southern Arizona Research, Science and Engineering Fair

AS021 A Three Month Analysis of the Desert Bighorn Sheep (Ovis canadensis nelsoni) Translocation Project in the Santa Catalina Mountain Range
Meagan Alanna Bethel, 16, Junior, Tucson Magnet High School, Tucson, Arizona, T: Margaret Helen Wilch

BI022 Using Chemical Biology to Target the Inhibitors of Apoptosis
Kelsey Mackenzie Barter, 17, Senior, University High School, Tucson, Arizona, T: Pamela Tautz

EA009 Comparison between Pleistocene Horse (Equus, Perissodactyla) Populations from Sonora, Mexico and Rancho La Brea, Southern California and Testing Bergmann's Rule Using Second Phalanges
Zeeshan Jawaid, 14, Sophomore, Carpe Diem Collegiate High School, Yuma, Arizona, T: Jayashree Chopra

EN029 Ultrasound-responsive Nanoparticles for Neurotherapeutic Delivery
Shelby Chi Yuan, 17, Junior, University High School, Tucson, Arizona, T: Pamela Tautz

ET032 The Effects of Bacteria Isolated from Waste Waster on Sodium Lactate Microbial Fuel Cells
Diego Aubert-Vasquez, 16, Junior, Tucson Magnet High School, Tucson, Arizona, T: Margaret Helen Wilch

EV033 The Environmental Dependent Passive Flux Meter: A Numerical Model Assisted Design
Stephen Yao, 17, Senior, University High School, Tucson, Arizona, T: Pamela Tautz
PH034  Head in the Clouds: Is the Van der Waals Force Present in Cloud Structure?
Jeremiah Thomas Pate, 15, Freshman, BASIS Oro Valley, Oro Valley, Arizona, T: Tommaso Cioni

ARKANSAS
Conway, USAR50, Arkansas State Science Fair

B1314  Establishing the Parkinson’s-Pesticide Connection through Computational Molecular Modeling
Devyani Shekhawat, 16, Junior; Dana Abulez, 17, Junior; Rachana Kombathula, 16, Junior, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley

CS072  Improving the Efficiency of Mobile Ad Hoc Network through Optimization of Inter-frame Space Values
Yeongwoo Hwang, 17, Senior, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Nicholas Seward

EE089  Single-Walled Carbon Nanotubes/Silicon Based Solar Cells
Nimit Rajesh Gandhi, 16, Junior, Little Rock Central High School, Little Rock, Arkansas, T: Melissa Donham

EN065  Using Nanotechnology to Enhance Osteoblast Proliferation and Adhesion: Comparison of Different Implantable Biologically Inert Spinal Instrumentation Materials
Hanya Marium Qureshi, 15, Junior, Pulaski Academy, Little Rock, Arkansas, T: Annice Floyd Steadman

EV047  The Effect of Phosphorus Levels on the Growth of Duckweed
John Joseph Bell, 15, Freshman, Little Rock Central High School, Little Rock, Arkansas, T: Melissa Donham
Fayetteville, USAR03, Northwest Arkansas Regional Science and Engineering Fair

ET012  Effectiveness of Downspout-Mounted Hydroelectric Systems
Connor Wilkins Fritsch, 14, Freshman, Haas Hall Academy, Fayetteville, Arkansas, T: Kelly Magoulick

Fayetteville, USAR07, West Central Regional Science Fair

B1006  Computational Analysis of Beta-Lactam Stabilization in the N-Terminal Domain of Silk Fibroin
Kevin Paul Fialkowski, 18, Senior, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: James Luba

CS008  Brownian Motion as a Source of Entropy for the Generation of Random Numbers
Russell Ean Bryan, 18, Senior, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Brian Monson

Jonesboro, USAR04, Northeast Arkansas Regional Science Fair

EE035  The Hound
Darrin Andrew McFall, 15, Freshman, Buffalo Island Central High School, Monette, Arkansas, T: Amanda Beth McFall

EN027  How Cool Is This?
Gabriel Bryant Priest, 15, Sophomore, Nettleton High School, Jonesboro, Arkansas, T: Jana Hudspeth

EV027  Acid Rain... Bad for Coral Reef
Adrienne Sara Green, 15, Sophomore, Nettleton High School, Jonesboro, Arkansas, T: Jana Hudspeth

Little Rock, USAR05, Central Arkansas Regional Science Fair

AS003  Evaluation of Physiological Conditions that Influence Emerging Rate on Small Hive Beetles
Enoch Park, 17, Junior, Pulaski Academy, Little Rock, Arkansas, T: Doug Reed

ET006  Rapid Aerodynamics Improvement Software Based on Innovative Drag Calculation and Polygonal Node Bifurcation
Kwuang Tang, 16, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley
MI004  Analysis of the ATP Hydrolysis Rate of Hepatitis C Viral Helicase in the Presence of PNR-379  
Darius Ford, 18, Senior, Parkview Arts and Science Magnet High School, Little Rock, Arkansas, T: Leslie Williams  
Monticello, USAR06, Southeast Arkansas Regional Science Fair  
EV008  Storm Water Solutions, II  
Peyton Michelle Aulds, 15, Sophomore, Ridgway Christian School, Pine Bluff, Arkansas, T: Diedre Marie Young

CALIFORNIA  
Contra Costa County, USCA08, Contra Costa County Science and Engineering Fair  
EN044  Engineering Novel Biochips for the Rapid and Sensitive Detection of Biomarkers  
Jennifer Li, 17, Senior, Miramonte High School, Orinda, California, T: Dan Shortenhaus  
ET046  MFCs Reloaded: A Novel Bio-Augmented Design to Enhance MFC Efficiency  
Dhuvarakesh Karthikeyan, 15, Sophomore, California High School, San Ramon, California, T: Lisa Breton  
ME073  Investigating the Opposing Roles of Oncoprotein gC1qR and Tumor Suppressive cC1qR as Mechanisms for Inhibiting Cancer Pathogenesis  
Emily M. Pang, 17, Senior, Dougherty Valley High School, San Ramon, California, T: Minu Basu  
PH039  Quantum Locking: Applications towards Controlled Frictionless Spatial Motion  
Julienne Sauer, 14, Freshman, Dougherty Valley High School, San Ramon, California, T: Katherine Huang  
Costa Mesa, USCA01, Orange County Science and Engineering Fair  
BE044  Cognitive Performance in Schizophrenia & Bipolar Disorder & their First-Degree Relatives  
Mireibel Xuan Vy Tran, 16, Junior, Marina High School, Huntington Beach, California, T: Gavin Ehlers  
EN068  Strongly Coupling the Electrical and Mechanical Dynamics of the Heartbeat in a Diffuse Interface Model  
Kevin Kyumin Lee, 17, Senior, University High School, Irvine, California, T: Shannon Bunch  
Fresno, USCA03, Central California Regional Science, Mathematics and Engineering Fair  
CH022  Electronic Tongue: Tastes of Toxic Metal Ions in Water  
Seung Hye (Beatrice) Choi, 15, Sophomore, University High School, Fresno, California, T: Brenda Royce  
EE042  A Multi-Architectural Approach to the Development of Embedded Hardware  
George David Morgan, 16, Junior, Clovis North Educational Center, Fresno, California, T: Jonathan Bowns  
ME310  Supertasting Ability, Satiety, and Childhood Obesity in the Hispanic Population  
Japmeet Kaur Sandhu, 16, Junior; Ashima Thusu, 15, Sophomore, Clovis North Educational Center, Fresno, California, T: Jonathan Bowns  
PH051  Scientific and Technical Study on Dependent Factors for Wireless Power Transfer  
Manjit Ruprem, 14, Freshman, Floyd B Buchanan High School, Clovis, California, T: Richard Kinney  
Los Angeles, USCA02, Los Angeles County Science and Engineering Fair  
AS047  Quantitative Analysis of the Role of Mitochondria in Drosophila melanogaster Lifespan  
Caleb Smith, 16, Junior, Palos Verdes Peninsula, Rolling Hills Estates, California, T: Peter Starodub  
AS054  Breeding Season of the Cephaloscyllium ventriosum or Pacific Swell Shark in Captivity  
Cheyenne Newallis, 15, Sophomore, San Pedro High School Marine Science Magnet, San Pedro, California, T: Elisa de la Pena-Nagle  
BE035  Linking Expression and Function of FoxP2 in Adult Songbirds Using Operant Preference Testing  
Petra Luna Grutzik, 18, Senior, Redondo Union High School, Redondo Beach, California, T: Matthew Keye  
EN058  Dependence of Silica Sol–Gel Thin Film Material Properties on Fabrication Methods  
Samantha Indunil Wathugala, 17, Senior, Palos Verdes Peninsula, Rolling Hills Estates, California, T: Peter Starodub  
EN059  A Microfluidic Device for Blood Separation and Cell Morphology Analysis Using MicroVortex Technology  
Vick Cheung Liu, 16, Sophomore, Flintridge Preparatory School, La Cañada Flintridge, California, T: Laura Kaufman
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<td>MI062</td>
<td>Transcription Factors that Regulate Antimicrobial Resistance in <em>Candida glabrata</em></td>
<td>Elan Eng Filler, 15, Sophomore, Palos Verdes High School, Palos Verdes High School, California, T: Michaele Scheerle</td>
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<td>CH020</td>
<td>Building a Library of Difluoro- and Trifluoro- Artemisinins, Year Two</td>
<td>Shreya Sundaresh Ramayya, 16, Junior, Palos Verdes Peninsula, Rolling Hills Estates, California, T: Peter Starodub</td>
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<td>Development of an Electroencephalography (EEG) Device for Evaluation of Mild Traumatic Brain Injury, Year Two</td>
<td>Braeden Christopher Benedict, 17, Junior, Palos Verdes Peninsula, Rolling Hills Estates, California, T: Peter Starodub</td>
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<td>EN062</td>
<td>A Novel Energy Harvesting System with a Piezo Element to Power a Visual Prosthesis</td>
<td>Kumaran V.K. Ratnam, 15, Freshman, Dublin High School, Dublin, California, T: Janet Kaehms</td>
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<td>ME074</td>
<td>Progressing Targeted Cancer Therapy and Diagnosis: Analyzing the Role of MiRNA Target Interactions and Expression Signatures for Glioblastoma Progression</td>
<td>Vaishnavi Shrivastava, 16, Junior, Mission San Jose High School, Fremont, California, T: Arshiya Sultan</td>
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<tr>
<td>PH052</td>
<td>Achieving Net Gain Nuclear Fusion in Microcapsules by Coupling Sonoluminescence and Magnetic Compression</td>
<td># Raghu Vamsi Dhara, 18, Senior, Mission San Jose High School, Fremont, California, T: David Lau</td>
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<tr>
<td>MA038</td>
<td>An Investigation of the p53 Ubiquitin-Proteasome System Using a Novel Non-Steady-State Enzyme Kinetic Model</td>
<td>Prem Murali Talwai, 16, Junior, Mira Loma High School, Sacramento, California, T: Tim Thayer</td>
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<td>ME116</td>
<td>Hepatocyte Differentiation of hESC Cultured Under Xeno-Free and Feeder-Free Conditions</td>
<td>Dhruva Biswas, 17, Senior, Mira Loma High School, Sacramento, California, T: Dean Karagianes</td>
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<td>PH059</td>
<td>The Relationship between Air Properties and the Deflection Experienced by an Electric Arc, Year Two</td>
<td>Isfar Syed Munir, 18, Senior, Tracy Joint Union High School, Tracy, California, T: Dean Reese</td>
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<td>EN066</td>
<td>Magnetic Field Modulation for Assembly and Manipulation of Responsive Nanoscale Optical Systems</td>
<td>Michael Janner, 18, Senior, Redlands East Valley High School, Redlands, California, T: Colleen Duncan</td>
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<td>ET062</td>
<td>Cones, Chutes, and Coils: Novel Proposals to Ebb Wingtip Vortices</td>
<td>Loren J. Newton, 16, Senior, La Sierra High School, Riverside, California, T: Rob Newton</td>
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<tr>
<td>MA052</td>
<td>On the Theory of Lures with Dynamical Action on Compact Topological Manifolds and Ordinary Hyperreal Fractal Strings</td>
<td>Jared Anthony Tramontano, 15, Sophomore, Centennial High School, Corona, California, T: Michael Maroun</td>
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<td>PH076</td>
<td>Time-Resolved Spin Lifetime Measurement of Surface States on the Topological Insulator Bi2Se3</td>
<td>Connor Everett Tom, 16, Junior, John W. North High School, Riverside, California, T: Michele Lieux</td>
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<td>PS043</td>
<td>An Eco-friendly RNA Interference-based Insect Control for Management of Citrus Greening Disease using a Model System</td>
<td>Saumya R. Keremane, 16, Junior, Martin Luther King, Jr. High School, Riverside, California, T: Kristine Jennings</td>
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San Diego, USCA05, Greater San Diego Science and Engineering Fair

BE039  Determining the Effectiveness of Various Subskills Training and Practice on Visual Perception
Noorhan Zainab Amani, 14, Freshman, Mount Everest Academy, San Diego, California, T: Rebeca Trudith Pachon

CS073  Semantic Multilayer SVM: Novel Artificial Intelligence Applied to Prostate Cancer Grading and Breast Cancer Diagnosis
William C. Hang, 16, Junior, Scripps Ranch High School, San Diego, California, T: Ian Sacco

CS074  Indium: Using Novel Machine Learning Algorithms to Develop a Nondisease-specific Personalized Medicine Engine
# Yousuf Mounir Soliman, 17, Senior, Canyon Crest Academy, San Diego, California, T: Wendy Slijk

CS075  High Dimensional Clustering Algorithms Applied to Face Recognition of Obscured Faces
Kalyani Ramadurgam, 15, Freshman, Torrey Pines High School, San Diego, California, T: Julia Newman

MA047  Applying Bayes’ Theorem to DNA Sequence for Identification of Pathogenic Bacteria
Min Jean Cho, 16, Sophomore, Torrey Pines High School, San Diego, California, T: Julia Newman

ME101  Towards a Combination Antiviral Therapy for Flu: An Interdisciplinary Drug Discovery Effort
# Eric S. Chen, 17, Senior, Canyon Crest Academy, San Diego, California, T: Wendy Slijk

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

BE036  Evaluating Problem Solving Approaches Using Child Safety Locks
Amberley Meredith Powell, 16, Junior, Technology High School, Rohnert Park, California, T: Joseph Immel

PH054  Discovering the Magnus Effect by Rolling Spheres through Resistant Fluids
Gwendolyn Rose Gilbert-Snyder, 15, Sophomore, El Cerrito High School, El Cerrito, California, T: Robert Fabini

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

BI044  Novel Design and Evaluation of Chitosan Nanoparticle Ocular Drug Delivery System
Sriram Somasundaram, 16, Junior, The Harker School, San Jose, California, T: Gary Blickenstaff

CB038  A Genome-Wide Analysis Tool to Identify Functional Regulatory Single Nucleotide Polymorphisms (SNPs) Impacting Disease
## Natalie Ng, 18, Senior, Monta Vista High School, Cupertino, California, T: Joe Kim

# Swetha Revanur, 15, Sophomore, Evergreen Valley High School, San Jose, California, T: David Walz

CS079  A Lattice Boltzmann Method Based Computational Model for Optimizing Anode Morphologies to Design Efficient Li-ion Batteries
Varun Krish Mohan, 17, Senior, The Harker School, San Jose, California, T: Mark Brada

EN047  Engineered Chitosan Based Multi-reservoir Devices for Effective Localization to Treat a Multifaceted Set of Diseases
Vibhav Satsheel Altekar, 18, Senior, Lynbrook High School, San Jose, California, T: Amanda Day Alonzo

MA043  Characterizing the n-Division Points of Genus-0 Curves through Straightedge and Compass Constructions
Nitya Mani, 16, Junior, The Harker School, San Jose, California, T: Chris Spenner

ME077  A Wearable Ultrasonic Device for the Early Detection of Tumor Recurrence
Milan Satch Gambhir, 15, Sophomore, Bellarmine College Preparatory, San Jose, California, T: Rod Wong

ME109  Quantitative Analysis of Macro-Cellular Biomarkers in Early Stage Ductal Carcinoma in situ (DCIS) Immunohistochemical Cytopathology Images Using Machine Learning
Tanisha M. Joshi, 15, Freshman, Evergreen Valley High School, San Jose, California, T: Mary-Kate Lesoine
Steven Michael Wang, 16, Junior; Andrew Cheng Jin, 16, Junior, The Harker School, San Jose, California, T: Chris Spenner

PH072 A Kinetic Monte Carlo Study of the Scalability and Variability of the Forming Voltage of Transition Metal Oxide ReRAMs
Namrata Ramya Balasingam, 16, Junior, Archbishop Mitty High School, San Jose, California, T: William Abb

Santa Cruz, USCA11, Santa Cruz County Science and Engineering Fair

EA303 Secrets of San Lorenzo Valley's Atmosphere: Vertical Meteorological Measurements, Part Two
Connor B. Lydon, 17, Junior; Natalie Rose Gallagher, 17, Junior, San Lorenzo Valley High School, Felton, California, T: Ned Hearn

EM018 Sustainable Future for Endangered Species? Predicting the Impacts of the Wilmar Policy on Bornean Orangutan Populations
Emma R. Freedman, 14, Freshman, Stanford University Online High School, Corralitos, California, T: Patricia Freedman

Seaside, USCA12, Monterey County Science and Engineering Fair

BE017 Testing Teaching Styles
Jennifer Lee McDonnal, 18, Senior, York School, Monterey, California, T: Pam Durkee

PH081 The Leidenpump: A Non-Mechanical Means of Fluid Delivery
John Chapman Alexander Caddell, 16, Sophomore, Stevenson School, Pebble Beach, California, T: Phil Wenzel

COLORADO

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

EE027 Hit Me with Your Best Shot: An Arduino Controlled Training Platform for Child Martial Artists
Mary Hood, 15, Sophomore, Sargent High School, Monte Vista, Colorado, T: Matthew Relyea

EM014 A Potential Management Strategy for the Endangered Southwestern Willow Flycatcher: Effects of Early Season Wildfire on Foraging and Nesting Habitat
Taylor Ann Rocha, 18, Senior, Monte Vista High School, Monte Vista, Colorado, T: Loree Ann Harvey

Boulder, USCO09, Corden Pharma Colorado Regional Science Fair

CH048 Glyco-Amino Acid Synthesis and the Effect of Glycosylation on Chemotaxis
Jaimie Zhu, 17, Senior, Fairview High School, Boulder, Colorado, T: Paul Strode

EA001 Lunar Tide Contribution to Thermosphere Weather
Jesse Tan Zhang, 16, Junior, Fairview High School, Boulder, Colorado, T: Paul Strode

EV005 Zero Valent Iron Nanoparticle Enhanced Polyethersulfone Membranes for Water Filtration: Isolating Casting Parameters for Global Applications
Hope Alexis Weinstein, 17, Senior, Fairview High School, Boulder, Colorado, T: Paul Strode

Brush, USCO03, Morgan-Washington Bi-County Science Fair

MA004 An Application of Calculus Principles to Icicle Volume
Jacob Floyd Nichols, 18, Senior, Brush High School, Brush, Colorado, T: David L. Miner

PH003 The Effect of Frequency on Wave Formation in Sugar-Water Mixtures of Various Specific Gravities
Merritt Lynn Singley, 16, Sophomore, Brush High School, Brush, Colorado, T: David L. Miner

Colorado Springs, USCO04, Pikes Peak Regional Science Fair

BE307 Testing the Significance of Racial, Age, and Gender Descriptors in Relation to Personal Interaction
Jason Lewis MacKay, 17, Senior; Audra Burke, 17, Senior, Edison High School, Yoder, Colorado, T: Angela Golding

ME023 The Impact of Deuterium Oxide on the Cell Cycle of RBL Cell during Interphase via Tubulin-mediated Antimitotic Action
Roshni S. Kalkur, 17, Junior, Air Academy High School, United States Air Force Academy, Colorado, T: Kathrin Spender
MI017  The Itch to Twitch: The Effects of DNA, DNase, and Degraded DNA on Twitching Motility in *Acinetobacter baylyi*
Rebecca Bloomfield, 14, Freshman, William J. Palmer High School, Colorado Springs, Colorado, T: Carolyn Derr
*Denver, USCO10, Denver Metropolitan Regional Science and Engineering Fair*

EN020  Use of Shape Memory Polymers for Neonatal Endotracheal Tubes
Apurva Subramanian, 17, Senior, Cherry Creek High School, Greenwood Village, Colorado, T: Stephen Smith
*Denver, USCO02, San Juan Basin Regional Science Fair*

ET022  Effects of Scaling a Microbial Fuel Cell
Michael William Brady, 18, Senior, Cherry Creek High School, Greenwood Village, Colorado, T: Kevin Burns
*Durango, USCO02, San Juan Basin Regional Science Fair*

EM032  Hydraulic Fracturing Fluid Remediation in Water: Further Exploration of Mycoremediation Capabilities of Fungi
Rachel Louise Rossi, 18, Senior, Durango High School, Durango, Colorado, T: Robert Milofsky
*Fort Collins, USCO50, Colorado Science and Engineering Fair*

CB058  Suppression of Malonyl-CoA: ACP Transacylase as a Treatment for Squamous Cell Carcinomas
Lawrence Zhang, 18, Senior, Fairview High School, Boulder, Colorado, T: Paul Strode
*Fort Collins, USCO50, Colorado Science and Engineering Fair*

EE093  Cube Satellites: Miniature Satellite Design and Operations for Pulsed Plasma System Applications
Matthew Hileman, 16, Sophomore, School: The Classical Academy, College Pathways, Colorado Springs, Colorado, T: Candus Muir

ET015  Year II: Domestic Wastewater Clarification and Power Generation—Increasing the Conductivity of Permeated Electrodes in a Single-Celled Microbial Fuel Cell
Nurul Mohdrezza, 18, Senior, Union Colony Preparatory School, Greeley, Colorado, T: Cathy Hoyt
*Grand Junction, USCO05, Western Colorado Regional Science Fair*

MI005  The Conjugative Plasmid RK2 as a Delivery System for Artificial AnatheriaH Genes: A Novel Synthetic Biology Alternative to Traditional Antibiotics
Logan Collins, 17, Junior, Fairview High School, Boulder, Colorado, T: Paul Strode
*Grand Junction, USCO05, Western Colorado Regional Science Fair*

EM003  Riparian Area Multiple Indicator Monitoring
Sarah Elizabeth Stalcup, 17, Senior, Delta High School, Delta, Colorado, T: Robin Liston
*Greeley, USCO06, Longs Peak Science and Engineering Fair*

MA057  Creating Permutations for Actions on Young Tableaux
Jennifer Jude Zhifan Jones, 16, Junior, Frontier Academy, Greeley, Colorado, T: Kathy Marie Jones
*La Junta, USCO07, Arkansas Valley Regional Science Fair*

ET034  Phase II: Identification of Isolates of Algae with Biofuel Properties
Mitchell Fosdick, 15, Freshman, Fowler High School, Fowler, Colorado, T: Debbie Fosdick
*Sterling, USCO08, Northeast Colorado Regional Science Fair*

ME051  No Bull about It: Antioxidants Prevent DNA Damage
Arjana Begzati, 17, Junior, Fleming High School, Fleming, Colorado, T: Linda Niccoli

PS016  A Study of *Pseudomonas putida* as a Viable Biofertilizer for Crops in Soils with High Salinity
Tara Lynn Cook, 18, Senior, Sterling High School, Sterling, Colorado, T: Carlye Armstrong

**CONNECTICUT**

Hamden, USCT50, Connecticut Science & Engineering Fair

EM015  Biological Control of the Invasive Eurasian Watermilfoil Using Aquatic Weevils
Janine Alysa Kerr, 16, Junior, Danbury High School, Danbury, Connecticut, T: Andrea LaRosa

EN021  The Effects of Barefoot and Shod Running on Risk of Injury in High School, Female, Recreational Runners
Megan Boyer, 17, Senior, Manchester High School, Manchester, Connecticut, T: Megan Rader

EN022  The Synthesis and Characterization of EGCG-PLGA Conjugates and Mixtures: A Novel Biomaterial for Tissue Engineering
Anubhuti Mathur, 16, Freshman, Glastonbury High School, Glastonbury, Connecticut, T: Diane Pintavalle
EV021 Investigating the Efficacy of Bioluminescent Mushroom *Panellus stipticus* as a Biosensor to Detect the Toxicity of Water Contaminants  
Bridget Ann Oei, 18, Senior, East Catholic High School, Manchester, Connecticut, T: Lesa Milas

MI027 Synergistic Antimicrobial Activity of Manuka Honey and Silver Nitrate  
Emma Louisa Goodman, 16, Junior, Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante

PH046 Partitioning Gamma-Ray Sources in Fermi Large Area Telescope Observations for Spatial and Spectral Analysis  
Isabelle Goldstein, 17, Senior, Ridgefield High School, Ridgefield, Connecticut, T: Michael Yagid

DISTRICT OF COLUMBIA  
Washington, USDC01, District of Columbia STEM Fair

AS034 The Effectiveness of Speckle Count to Determine Bottlenose Dolphins (*Tusiops cf. aduncus*) Age Range  
Maya Lynn Hall, 18, Senior, School Without Walls, Washington, District of Columbia, T: Sydney Bergman

AS035 The Effect of Ocean Acidification on Planarian Regeneration  
Kelsey Mourning White, 18, Senior, School Without Walls, Washington, District of Columbia, T: Sydney Bergman

CB040 The Protein Expression of the Sp.185/333 Gene Family in the Immune System of Purple Sea Urchins  
Marcella Pick Snead, 17, Senior, School Without Walls, Washington, District of Columbia, T: Sydney Bergman

FLORIDA  
Avon Park, USFL01, Heartland Regional Science and Engineering Fair

EV002 Can Woody Fiber from the Invasive Exotic Tree Brazilian Pepper (*Schnius terebinthifolious*) Be Utilized as a Filtration Medium to Remove Phosphate from Waste Waters?  
Johnathan Forrest Fox, 16, Sophomore, Okeechobee High School, Okeechobee, Florida, T: Wendy Ruth Reister

MI061 *Mycoplasma bovis* in Dairy Cattle: Can It Be Isolated from More than One Site?  
Cady McGehee, 14, Freshman, Okeechobee High School, Okeechobee, Florida, T: Dan Thomas

Bradenton, USFL02, Manatee Lockheed Regional Science and Engineering Fair

CH016 Novel Iron-Catalyzed Hetero Diels-Alder Reaction directed towards Natural Product Synthesis  
Andre Sanchez, 17, Senior, Manatee High School, Bradenton, Florida, T: Larry Gaudioso

ME052 Athletic Kicks vs. Strain of the Patellar Tendon  
Mackenzie T. Grubb, 16, Junior, Braden River High School, Bradenton, Florida, T: Janjay Gehndyu

Bushnell, USFL18, Sumter County Regional Science Fair

BI009 The Investigation of the Antineoplastic Effects of Lentinus Edodes on Lung Cancer (PC9) Cell Line and Trachial-Bronchial Epithelial (AALE) Cells, Phase II  
Elijah D. English, 18, Senior, South Sumter High School, Bushnell, Florida, T: Emily M. Keeler

EA002 Comparison of Evaporation Rates from Mine Lakes to the Transpiration Rates from Previous Plant Life  
Timothy J. Lillo, 17, Junior, South Sumter High School, Bushnell, Florida, T: Emily M. Keeler

EM301 "Prawn Shop": Can Quarries Sustain Freshwater Prawns?  
Peter Ashley, 15, Sophomore; Kyle Alexander Coady, 15, Sophomore, South Sumter High School, Bushnell, Florida, T: Emily M. Keeler

ET007 Optimizing Turbine Efficiency, Year Three  
Hunter David Stafford, 17, Senior, The Villages High School, The Villages, Florida, T: Monica Vinas

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

BI042 Moving Towards the Cure for Alzheimer's Disease: The Effects of Histone Deacetylase Inhibitors on Neurofibrillary Tangle Formation and Microtubule Stability to Preserve Neuronal Integrity (A Novel in vitro Trial)  
Jay Chandar, 14, Freshman, Canterbury School, Fort Myers, Florida, T: Kelly Mahan-Etcheverry
Finalist Directory

CB001  The Effect of Orphan Receptor GPR83 on Neuronal Differentiation
Maxwell D. Norleans, 15, Sophomore, Fort Myers High School, Fort Myers, Florida, 
T: Catherine P. Tucker

MI301  A Novel Approach Using Ultraviolet Radiation to Eliminate Bacteria Leading to Nosocomial Infections on Data Entry Peripherals in Hospitals
# Varun P. Varshney, 16, Junior; Ahmed A. Ahad, 17, Junior, Canterbury School, Fort Myers, Florida, T: Kelly Etcheverry

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

EE005  Dual Function Solar Converter/Solar Shade System Using 3-D Spidron Architecture
Zoe Rochelle Barbeau, 16, Sophomore, Home School Program under St. Lucie County School District, Port St. Lucie, Florida, T: Lori Kay Barbeau

EE006  Passive Auto-Tracking Heliostat
# Brayton Miles, 17, Junior, Niceville High School, Niceville, Florida, T: Gina Emery

EE007  Analysis and Design of Powered Exoskeleton Technology Emulating Human Body Functions
# Nicholas A. Hopkins, 17, Senior, Fort Walton Beach High School, Fort Walton Beach, Florida, T: Tavia Lee Marez

ET003  Optimal Navigational Escape Routes for Collision Avoidance Using Multiple Object Tracking
# Alexis Rose Hopkins, 15, Sophomore, Fort Walton Beach High School, Fort Walton Beach, Florida, T: Tavia Lee Marez

PS004  The Effects of Rhizobia Inoculation on Moringa oleifera Growth, a Fourth Year Study
# Sarah Elizabeth Craig, 16, Sophomore, Niceville High School, Niceville, Florida, T: Sharon Richardson

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

AS052  Thoracic Temperatures of the Postman Butterfly Heliconius melpomene in Relation to Diurnal Ambient Temperature Changes on Coastal Guyana
Carissa Arlene Deranek, 16, Junior, North Broward Preparatory School, Coconut Creek, Florida, T: Howard York

BE042  Identification of Markers Differentiating Anxiety from ADHD in a School-Aged Population
Suganth Kannan, 14, Freshman, American Heritage School, Plantation, Florida, T: Leya Joykutty

CS080  Determining Optimal Police Patrol Times and Locations Using Local Search Techniques
Vivek Naresh Miglani, 16, Junior, Marjory Stoneman Douglas High School, Parkland, Florida, T: Annette Traverso

EM048  Species Diversification of Farfantepenaeus duorarum in South Florida Aquatic Ecosystems: The Significance of Genetic Variation within Geographically Diverse Pink Shrimp Populations
Nicole Odzer, 15, Sophomore, Pine Crest School, Fort Lauderdale, Florida, T: Jennifer Gordiner

EV052  Investigating Relationships between Air Quality and Environmental Persistence of Fecal Indicator Bacteria at Recreational Beaches: A Molecular MST Approach
# Kristina Marie Thoren, 17, Senior, American Heritage School, Plantation, Florida, T: Osmel Rodriguez

ME108  Determining the Active Compound in Achyranthes aspera Leaf Extract and Its Effects on the Cell Cycle and Growth of Pancreatic Cancer Cells
Nanruoyi Zhou, 18, Senior, American Heritage School, Plantation, Florida, T: Osmel Rodriguez

Gainesville, USFL08, Alachua Region Science and Engineering Fair

EN001  Coquina and the Castillo de San Marcos: The Mystery Behind the Oldest Fort in the United States
Sanika Subhash, 16, Sophomore, F.W. Buchholz High School, Gainesville, Florida, T: Diane McDilda

ME005  Nicotine and Genistein as Novel Therapeutic Agents for Alzheimer’s Disease
# Meenakshi Bose, 16, Junior, Eastside High School, Gainesville, Florida, T: Virginia Christensen

PH303  Optimizing Astronaut Squat Exercise on the International Space Station, Year Three
Christopher Daniel Fregly, 16, Sophomore; Brandon Kim, 15, Sophomore, Eastside High School, Gainesville, Florida, T: Virginia Christensen
Intel ISEF 2014 Finalist Directory

Green Cove Springs, USFL35, Clay Rotary Regional Science and Engineering Fair

BI309 A Test to Determine the Effect of Ethyl Alcohol on the Degradation of Cellular Hydrogen Peroxide by Enzyme Catalase
Karen Grace Wilkening, 18, Senior; Josee Laure Kapseu, 18, Senior, Middleburg High School, Middleburg, Florida, T: Thomas Laird, Holt Laird

EE032 What Type of Wing Design Creates the Greatest Lift? “Dimpled Airfoil”
Nathan Roy Martus, 16, Sophomore, Oakleaf High School, Orange Park, Florida, T: Jennifer L. Butler

Jacksonville, USFL10, Northeast Florida Regional Science and Engineering Fair

AS037 The Effect of Enviromental Stresses on the Gender Ratio of a Population
Alexandra Nicole Pentel, 17, Senior, The Bolles School, Jacksonville, Florida, T: Kathryn Halloran

EE060 Manipulating Poly (vinylidene fluoride) Films with a Human Bipedal Motion
Rebecca P. Kincart, 15, Sophomore, Episcopal School of Jacksonville, Jacksonville, Florida, T: Marion Zeiner

ME001 The Effect of Hypoxia on Human Osteosarcoma Cells’ Motility and Expression of HIF-1 and HIF-2
Morgan Sofia Lucey, 17, Junior, Episcopal School of Jacksonville, Jacksonville, Florida, T: Marion Zeiner

MI006 Analyzing the Complex Carbohydrate Structures on the Plasma Membrane of the Cultured Mosquito Cells Using Fluorescently Labeled Lectins
Carly Crump, 17, Junior, Episcopal School of Jacksonville, Jacksonville, Florida, T: Marion Zeiner

Jensen Beach, USFL25, Martin County Regional Science and Engineering Fair

MA044 Modeling Plant Growth with Mathematical Functions
Shantanu Jakhete, 13, Freshman, South Fork High School, Stuart, Florida, T: Christopher Bryan

MI007 Inhibitory Effects of Allicin on Escherichia coli DH5α Growth
Jessica Hsieh Li, 18, Senior, South Fork High School, Stuart, Florida, T: Linda Stitely

Lake City, USFL11, Suwannee Valley Regional Science and Engineering Fair

BE003 Beef! How Should You Cook It and How Do Consumers Prefer It?
Case Hilland Emerson, 16, Junior, Union County High School, Lake Butler, Florida, T: Renae Allen

EM056 The Rate of Decomposition of Compostable Packaging Products
Tessa Angele Ricker, 15, Freshman, School: Bradford High School, Starke, Florida, T: Linda Jane Ricker

Lakeland, USFL12, Polk Region Science and Engineering Fair

EE008 Concentrated Solar: Raising It to the Next Level
Andrew Kenneth Noonan, 17, Junior, International Baccalaureate School at Bartow High School, Bartow, Florida, T: Debbie Kennon

MI001 ESCAPE from ESKAPE: Effect of Natural Substances on Penetration of Biofilms Formed by the ESKAPE Bacteria
Divya Ravinder, 15, Sophomore, International Baccalaureate School at Bartow High School, Bartow, Florida, T: Debbie Kennon

Lakeland, USFL50, State Science and Engineering Fair of Florida - Ying Scholars

AS001 Distribution and Patterns of Movement of the Weevil Diaprepes abbreviatus in Eucalyptus (Corymbia torelliana), a Fast-Growing Biofuel Crop
Evan MacKay, 17, Junior, Vero Beach High School, Vero Beach, Florida, T: Heather Holden

CS081 Procedural Generation of Earth-Like Planets
Owen R. Kelly, 18, Senior, Spruce Creek High School, Port Orange, Florida, T: Anne Cooney

ET056 Infrared Alignment and Photon Densification Apparatus for Energy Optimization
Andrew J. O’Neill, 18, Senior, Suncoast Community High School, Riviera Beach, Florida, T: Jeffrey Laufer

EV009 Preventing the Global Reproductive Failure of Aquatic Life through the Catalytic Treatment of Endocrine Disrupting Compounds in Municipal Waste Water
Zachary A. Loeb, 17, Senior, Viera High School, Viera, Florida, T: Elizabeth Youngs

MA049 Determining the Effectiveness of an Optimization Matching in Kidney Paired Donation Using Graph Theory
Srimayi Tenali, 15, Sophomore, West Shore Junior-Senior High School, Melbourne, Florida, T: Paula Ladd

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ME004 Mela NO MORE: Creating Novel and Potent siRNA-based Biotherapies for the Treatment of Melanoma
- Robert M. Bacchus, 17, Senior, Lincoln Park Academy, Fort Pierce, Florida, T: Nancy Hosie

MI070 Effects of Selective Agonism of Angiotensin II AT1 and AT2 Receptors on Neural Differentiation and Proliferation in Human Neural Stem Cells
- Brigitte K. Blanco, 17, Junior, Pine Crest School, Fort Lauderdale, Florida, T: Jennifer Gordinier

PS032 The Correlation between Oleoresin Production in Pine Species with the Number of Resin Canals They Produce, Year Five
- Holly Linn Tucker, 18, Senior, Union County High School, Lake Butler, Florida, T: Renae Allen

ME007 An in vitro Study of the Effectiveness of Cinnamon Compounds on the Degradation of Amyloid-B and Tau Protein in Alzheimer’s Disease
- Natalie Elizabeth Barton, 17, Junior, Bayside High School, Palm Bay, Florida, T: Ellen Muse

CH005 A Novel Approach to Solar Desalination Using Nanopaticles
- Garrett Alejandro Camps, 16, Junior, Melbourne High School, Melbourne, Florida, T: Sean Fisk

ME301 The Effect of Extracted Phycocyanin from Spirulina platensis on Irradiated Saccharomyces cerevisiae Cells
- Luke Patrick Evans, 17, Senior; John Daniel Evans, 17, Senior, Viera High School, Viera, Florida, T: Elizabeth Youngs

CB004 Overcoming Resistance
- Yasmin Sapphire Zubi, 18, Senior, Satellite High School, Satellite Beach, Florida, T: Joseph Scott

CH002 Modification of the Oxygen Evolution Reaction Using Iridium (IV) Oxide Combined with Precious Metals through the Dip-Coating/Calcination Reaction, a Sixth Year Study
- Albert Scott Halbing, 17, Senior, Cocoa Beach Junior-Senior High School, Cocoa Beach, Florida, T: Veronica Duys

BI053 Alleviating Atrophy
- Christian Stock, 17, Junior, Satellite High School, Satellite Beach, Florida, T: Joseph Scott

ET033 Algae....the Greener Fuel, Year Three
- Alexandra K. Gabrielski, 15, Freshman, Viera High School, Viera, Florida, T: Elizabeth Youngs

BE001 The Effect of the Area of Visible Sclera on a Person’s Perception of Another Person’s Trustworthiness

EE002 Two Transistor Ternary Random Access Memory
- Simon Peter Tsauassis, 16, Sophomore, Christopher Columbus High School, Miami, Florida, T: Alina Sanchez

EE003 Vertical Axis Wind Turbine Farm Configuration Efficiency Based on Schools of Fish in Nature
- Yenny Dieguez, 16, Sophomore, Miami Lakes Educational Center, Miami Lakes, Florida, T: Kevin Murphy

EE009 The Varied Use of Membranes and Mediators to Enhance the Ionic and Electronic Conductivity of a Capacitor
- Swati Narasimhan, 16, Junior, Miami Killian Senior High School, Miami, Florida, T: Marianne Vanevic

PH301 Muon Flux through Various Substances and Conditions
- Yonah Elorza, 18, Senior; Ana Sofia Olano, 17, Junior, Ronald W. Reagan/Doral Senior High School, Doral, Florida; T: Andres Torres

New Port Richey, USFL30, Pasco Regional Science and Engineering Fair

EE015 Manipulating the Center of Gravity in order to Reduce Rollover Rates in Sports Utility Vehicles
- Vasili Angelo Courialis, 15, Sophomore, Wiregrass Ranch High School, Wesley Chapel, Florida, T: Vasili Angelo Courialis
MA006  Mathematically Modeling Genetic Amplification
#  Pranav Ishaan Warman, 15, Sophomore, Academy at the Lakes, Land O' Lakes, Florida,
 T: Colleen McCormick
Ocala, USFL16, Big Springs Regional Science Fair

MA005  Olympics Year Two: Battle of the Genders
#  Brandon Michael Williams, 16, Junior, Belleview High School, Belleview, Florida,
 T: Holly Denton

ME057  Genetic and Immunological Responses to Infection with Periodontal Pathogens in the
Development of Atherosclerotic Vascular Disease in ApoE -/- Mice
#  Niyanthesh Reddy, 16, Junior, Vanguard High School, Ocala, Florida, T: John Hare

PS304  Silver Nanoparticles Synthesized Using Green Chemistry: A Study of Environmental
Impacts on Brassica oleracea in a Hydroponic System
#  Jacob Austin Mosley, 14, Freshman; Cassandra Shae Mosley, 17, Junior; Gabriela Sullivan, 15,
Freshman, Vanguard High School, Ocala, Florida, T: John Hare
Orlando, USFL17, Dr. Nelson Ying-Orange County Science Exposition

EN049  In-Fiber Emulsification of Biodegradable Polymers for Drug Delivery
Catherine J. Li, 17, Junior, Lake Highland Preparatory School, Orlando, Florida,
 T: Nicole Justice

MA303  Discovery of Significant Tissue Specific DNA Methylation Patterns and Motif Analysis in
NPAS3 Gene in Schizophrenia-Diseased Individuals
Natasha Patel, 18, Senior; Soniya Qadir, 18, Senior, Lake Highland Preparatory School,
Orlando, Florida, T: Nicole Justice

ME308  Evaluation of Delirium in the Intensive Care Unit Utilizing Confusion Assessment Methods
Anika Batta, 17, Senior; Mackenzie Treu Brown, 15, Sophomore, Lake Highland Preparatory
School, Orlando, Florida, T: Nicole Justice

MI028  Identification of Motifs Necessary for Interaction between AB Toxins and PDI
Shilpa P. Reddy, 17, Senior, Lake Highland Preparatory School, Orlando, Florida,
 T: Keilan McWhorter

Panama City, USFL19, Florida Three Rivers Regional Science and Engineering Fair

EM055  Novel Hydrophobic/Hydrophilic Macro-Patterns for Enhancing Water Vapor Condensation
#  Shixuan Justin Li, 16, Sophomore, Rutherford High School, Panama City, Florida,
 T: Keilan McWhorter

Pensacola, USFL20, West Panhandle Regional Science and Engineering Fair

BI002  Does Oyster Mushroom Mycelium Colonize and Decompose Natural Growing Media More
Quickly When Oil-based Pollutants Are Present?
Aidan B. Arant, 19, Senior, Pensacola High School, Pensacola, Florida, T: Cherie Stephens

PH001  Evaluating the Proportionality Constant between Recessional Velocity and Distance from
Earth of 18 Selected Galaxies and the Relationship to Hubble's Constant
Davy M. Pardonner, 17, Senior, Pensacola High School, Panama City, Florida, T: Jim Bobbitt
Saint Augustine, USFL21, St. Johns County Science Fair

EE067  Creating a Microcontroller-Based, Non-Invasive, Multi-Modal,
Photoplethysmographic Monitor
Adam Benjamin Snowden, 15, Freshman, Ponte Vedra High School, Ponte Vedra, Florida,
 T: Steve Lyons
Sanford, USFL23, Seminole County Regional Science, Mathematics & Engineering Fair

BE005  The Changing Face of Education: Development of a Pedagogic Computer Application and
Its Effect on Student Cognition, Motivation, and Performance, Year Four
#  Caitlyn Mary Ralph, 17, Senior, Lake Howell High School, Winter Park, Florida,
 T: Vanessa Moosavifazael

BI025  I Got C: A Study of Epigallocatechin Gallate on the Stability of Vitamin C and Quality
Parameters in Deaerated and Sonicated Fresh Orange Juice Using Titration
#  Nirva Vassa, 15, Sophomore, Seminole High School, Sanford, Florida, T: Heather Clayton

ME015  Investigating the Effect of Polyhydroxylated Small-Gap Fullerene as an Antioxidant for
Amyloid$$\beta$$-Induced Free Radicals in NT2 Cells
Alexander Torres, 18, Senior, Seminole High School, Sanford, Florida, T: Heather Clayton

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

BE019  Linking the Onset Type and Level of Severity of a Diagnosis of Autism Spectrum Disorder
with Symptoms and Causations
#  Courtney Alexandra Astore, 17, Junior, Cardinal Mooney Catholic High School, Sarasota,
Florida, T: Dana Holloran
EM047 Optimization of CO₂ Calcination Using a Nickel Catalyst and Varying Concentrations of Calcium
Rebecca Elsishans, 17, Junior, Sarasota High School, Sarasota, Florida, T: John Stevenson
Tampa, USFL27, Hillsborough Regional Science Fair

EV039 The Distribution of Enterococci in Shoreline Sediment of Lake Carroll
Margaret K. Parrish, 15, Sophomore, Chamberlain High School, Tampa, Florida, T: Michael Zanatian

ME020 Development of a Novel Blood-Based Diagnostic for Canine Lymphosarcoma
Golda R. Shaw, 17, Junior, George M Steinbrenner High School, Lutz, Florida, T: Yung Romano
West Palm Beach, USFL29, Palm Beach Regional Science and Engineering Fair

BE041 The Effect of Social Networking on the Mental State of Senior Citizens
Haley Asofsky, 15, Sophomore, American Heritage School Boca/Delray, Delray Beach, Florida, T: Brian Ramos

BI051 Transactivation Assays for PPARγ and LXRα
Paul Carl Wassel, 17, Senior, Seminole Ridge Community High School, Loxahatchee, Florida, T: Lyn V. Slygh

CH043 Polarimetric Analysis of Solute Concentration on Optical Rotation of Assorted Chiral Molecules
Jacqueline Li Chen, 16, Junior, Alexander W. Dreyfoos School of the Arts, West Palm Beach, Florida, T: Stephen Anand

CS083 Enabling Robots to Navigate Complex Environments through the Use of a Learning AI Algorithm
Anthony Thomas Olive, 17, Junior, Palm Beach Central High School, Wellington, Florida, T: William Bartenslager

EE076 An Artificial Neural Network for Controlled Force Augmentation in an Electromyographic Exoskeleton Arm
Joshua Kopel Hellerstein, 17, Junior, Suncoast Community High School, Riviera Beach, Florida, T: Jeffrey Laufer

EV053 H₂Oh No: Pharmaceuticals Contaminate Groundwater! Sulfamethazine Adsorption Isotherms and Kinetics with Hypercrosslinked Polymer MN250 in Acid and Alkaline Environments
Maria Elena Grimmett, 15, Sophomore, Oxbridge Academy of the Palm Beaches, West Palm Beach, Florida, T: Kate Kilian

PH069 The Effects of Wheel Bearing Greases on Rotational Motion
Christian Peter Joseph Coury, 17, Junior, Suncoast Community High School, Riviera Beach, Florida, T: Jeffrey Laufer
Tavares, USFL34, Lake Regional Science & Engineering Fair

EM057 The Concentration Combination
Rishi Basdeo, 16, Freshman, East Ridge High School, Clermont, Florida, T: Dennis Doherty

GEORGIA

Albany, USGA01, Darton College/Merck Regional Science Fair

ET008 Examining the Efficiency of Vertical Axis Wind Turbines Using Inexpensive Materials
Courtney Ann Terrell, 17, Junior, Colquitt County High School, Moultrie, Georgia, T: Vance Hurst
Athens, USGA50, Georgia State Science and Engineering Fair

BIO35 Synthesizing pY Nanotubes: Toward a Phospholipid Bilayer Model
Mitesh Dakshesh Bhalani, 17, Junior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Susan Kramer

CS067 myEyeAssistant: Using Computer Vision to Create a Smart Camera Based Navigation System
Chuanbo Pan, 16, Junior, North Oconee High School, Bogart, Georgia, T: Marie Cooper Saxon

EM320 Fruit Waste Based Ammonia-Biosorptive Permeable Barriers
Aksal Pankaj Vashi, 16, Junior; Fernando Cruz, 18, Senior, Collins Hill High School, Suwanee, Georgia, T: Laura Herbig

MI065 Developing Novel Protein Targets for Bordetella pertussis Antibiotics: Understanding Protein Interfaces and Domain-Domain Interactions
William Huang Jin, 18, Sophomore, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Susan Kramer
Atlanta, USGA13, Fulton County Regional Science & Engineering Fair
CS009  RNNScan: Eukaryotic Gene Finding via Hybrid Recurrent Neural Networks
#  Anand Srinivasan, 17, Senior, Roswell High School, Roswell, Georgia, T: Laura Hunter

Atlanta, USGA03, Atlanta City Science & Engineering Fair
CB061  The Effects of S1P and FTY720 on OP-9 Bone Marrow Stromal Cell Morphology and S1P (subnumber 1)/S1P (subnumber 3) Expression
  Jovan Carter, 16, Junior, School: Coretta Scott King Young Women's Leadership Academy High School, Atlanta, Georgia, T: Tiffini Mason

CB062  Effects of THP-1 Macrophage Conditioned Media on the Growth of Human Umbilical Vein Endothelial Cells
  Amadou Sadio Bah, 17, Junior, School: BEST Academy High School at Benjamin S. Carson, Atlanta, Georgia, T: William Bagot

EA304  Hurricanes and Ocean Temperature
  Caroline Morris, 18, Senior; Mary Claire Morris, 17, Junior, Schools: Henry W. Grady High School, Atlanta, Georgia, T: Andrew Nichols

Conyers, USGA12, Rockdale Regional Science & Engineering Fair
CS001  Computational Simulation of T1 Contrast in BOLD-fMRI Scans to Improve Analysis Potential
#  Aqib Javid Momin, 18, Senior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Scott Bolen

EN301  Optimizing Solar Energy Using CuInS2 and TiO2 Nanoparticles
  Crystal Brockington, 18, Senior; Aaron Christopher Barron, 18, Senior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Scott Bolen

ME302  Enhancing Pancreatic Islet Function in an Obese Mouse Model
  Chelsea-Amoy Alicia Steele, 17, Senior; Lawrence Conley Jacobs, 17, Junior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Amanda Baskett

Duluth, USGA11, Gwinnett Regional Fair
AS027  Silvernano Toxicity in D. melanogaster
  Karen Gu, 15, Sophomore, Collins Hill High School, Suwanee, Georgia, T: Tara Termes

EN007  Designing the M.A.R.S. Suit
#  Sergio Alexander Parra, 18, Senior, Mill Creek High School, Hoschton, Georgia, T: Jennifer Maloney

ME047  Investigation of CD8 T Cell Dynamics in Pathogenic and Non-pathogenic SIV Infection
  Angelin Ponraj, 17, Senior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Susan Kramer

McDonough, USGA06, Henry County Science and Engineering Fair
AS025  The Effect of D. reticulatum Mucus as a Deterrent to Other Slugs
  Katie Gwaltney, 15, Freshman, Union Grove High School, McDonough, Georgia, T: Melissa Davis

BIO43  CARV-A-CURE: A Cell Viability Analysis of the Cancericidal Effects of Carvacrol on Pancreatic and Colorectal Carcinoma, Part Two
###  Tushar Mittal, 17, Senior, Dutchtown High School, Hampton, Georgia, T: Gregory Golden

EN006  Co-Incubation of Algae for Biofuel
  Jessica Marie Moore, 14, Freshman, Union Grove High School, McDonough, Georgia, T: Melissa Davis

ET013  How Does Flow Rate Affect Hydropower?
  Craig Worley, 16, Sophomore, Luella High School, Locust Grove, Georgia, T: Jody Barfield

Griffin, USGA09, Griffin RESA Regional Science Fair
ME016  The Effects of Miraculin on Blood Glucose Levels as Compared to Sucrose, Saccharin, and Aspartame
#  Hope Louise Didier, 16, Sophomore, McIntosh High School, Peachtree City, Georgia, T: Stephanie Sisk

PH056  Airfoils
  John Israel Hyle, 15, Sophomore, Starr's Mill High School, Fayetteville, Georgia, T: Christina Bryant

Milledgeville, USGA07, Georgia College & State University Regional Science and Engineering Fair
PS006  A Comparison of the Effects of Thermotherapy and Electrotherapy on Soybean Plants
  Auriel Samone Wright, 17, Junior, Northeast Magnet High School, Macon, Georgia, T: Tara Jones Lawrence
Warner Robins, USGA10, Houston Regional Science and Engineering Fair

ET001  Biomethane Production from the Anaerobic Digestion of Different Organic Substrates
Navin Buxani, 17, Junior, Houston County High School, Warner Robins, Georgia,
T: Stacy McLean

PS002  Identification of Cold Tolerant Napiergrass Acessions Using Intergeneric Transferable
        MSatellite Markers
Namrata Buxani, 16, Junior, Houston County High School, Warner Robins, Georgia,
T: Stacy McLean

HAWAII
Hilo, USHI05, Hawaii District Science and Engineering Fair

BI008  The Toxicity of Kavaalactones and Flavokavain A and B from Different Plant Areas of
        Kava on HepG2 Liver Cells
Keanu Dean Pinner, 16, Sophomore, Hilo High School, Hilo, Hawaii, T: Pascale Creek Pinner

PH017  Experimental Investigation of Segregation Mechanisms in Horizontally Shaken
        Granular Media
Mikiko Takato, 17, Senior, Hilo High School, Hilo, Hawaii, T: Pascale Creek Pinner

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

CB007  Identifying a Gene Responsible for Maturation of the Dendritic Cells in the Mammalian
        Immune System
Anna Winnicki, 17, Senior, Punahou School, Honolulu, Hawaii, T: Anna Liem

PH006  The Search and Discovery of CoRoT 29: Photometry of Transiting Exoplanets
        Using the CoRoT and Faulkes Telescopes
Christopher James Lindsay, 15, Freshman, Iolani School, Honolulu, Hawaii,
T: Mark David Lindsay

Honolulu, USHI08, Honolulu District Science and Engineering Fair

CB008  Biochemical Analysis of Post Translation Modification to the Parkinson's Disease Protein
        Alpha-Synuclein
Cherryse Abero Ulsa, 16, Sophomore, Wallace Rider Farrington High School, Honolulu,
Hawaii, T: Bebi Zamina Khan Davis

PH007  Rocks of the Rainbow: Asteroid Classification Using SDSS Filters
Stephanie Hiromi Spear, 16, Junior, Henry J Kaiser High School, Honolulu, Hawaii,
T: Keith Huntington

Honolulu, USHI50, Hawaii State Science and Engineering Fair

CB055  A Novel Cell Cycle Analysis Protocol Utilizing High Content Screening in
        Adherent Cell Line HS-27
Reid Akana, 17, Senior, Kamehameha Schools Kapalama, Honolulu, Hawaii, T: Gail Ishimoto

CH046  Liquid Organic Hydrogen Carriers for Hydrogen Fuel Storage: Heterocyclic N and O
        Compound Dehydrogenation Utilizing the Iridium PCP Pincer Catalyst
Jordan Lucas Fernandez, 18, Senior, Kapolei High School, Kapolei, Hawaii, T: Stacie Inouye

MI071  DNA Repair Mechanisms in Yeast: Shu Complex Interactions with Rdh54
Kyle T. Yoshida, 18, Senior, Kamehameha Schools Kapalama, Honolulu, Hawaii,
T: Gail Ishimoto

PS041  Genetic Diversity in Species of Cyperus
Ashley F. Kekona, 17, Senior, Kamehameha Schools Kapalama, Honolulu, Hawaii,
T: Gail Ishimoto

PS042  Examining Potential False Positives for Genetic Modification in Taro
Anuhea Delude, 17, Junior, Kamehameha Schools Kapalama, Honolulu, Hawaii,
T: Gail Ishimoto

Kaneohe, USHI06, Windward District Science and Engineering Fair

ME014  Fat Content of Beef
Kayla Hooker, 16, Junior, Kailua High School, Kailua, Hawaii, T: Sara Anglin

Lihue, USHI04, Kauai Regional Science & Engineering Fair

        Change Materials
Julia Mariko Hirano, 15, Sophomore, Waimea High School, Waimea, Hawaii, T: Kristal Daligcon

PH075  Predicting the Strength of Solar Flares using Sunspot Characteristics
Kayla Lokelani Ishida, 16, Junior, Waimea High School, Waimea, Hawaii, T: Kristal Daligcon
Mililani, USHI07, Central Oahu District Science and Engineering Fair

**EE013** Engineering A Novel Autonomous Wheelchair System for the Visually-Impaired and Quadriplegic Individuals
# Brandon Kinard, 16, Junior, Mililani High School, Mililani, Hawaii, T: Nel Venzon

**EM004** Isolating Hydrocarbon Metabolizing Bacteria from Oil Contaminated Soil and Seawater
Tess Marie Cramer, 17, Senior, Mililani High School, Mililani, Hawaii, T: Sandra Webb

Pearl City, USHI02, Leeward District Science and Engineering Fair

**CH007** Synthesizing a STAT3 Dimerization Inhibitor Molecule via Retrosynthetic Analysis
Maria Andrea Jurado, 18, Senior, Waipahu High School, Waipahu, Hawaii, T: Michael Sana

ET011 Investigating the Potential of Graphene Coated Electrodes in Corrosion Prevention to Improve the Performance of Dye-Sensitized Solar Cells
# Charlyn Manuyag, 18, Senior, Waipahu High School, Waipahu, Hawaii, T: Lucille Imamura

EV314 Investigating the Fermentation and Distillation of Ethanol from an Invasive Species
Jasmin Corpuz Valera, 17, Senior; Irene Kekaulani Kuikahi, 18, Senior, Waipahu High School, Waipahu, Hawaii, T: Michael Sana

Wailuku, USHI03, Maui Schools Science and Engineering Fair

**AS006** Hot Biology: Use of Thermal Imaging to Detect Nesting Behaviors of the Endangered Hawaiian Coot
# Sarah‘Alohilani Jenkins, 16, Junior, Molokai High School, Ho‘olehua, Hawaii, T: Lee DeRouin

**PH302** Observational Detection of Solar g-mode Oscillations Using Doppler Velocity Signals
# Min Sung Kim, 16, Junior; Matthew Thomas Sturm, 17, Junior, Maui High School, Kahului, Hawaii, T: Keith Imada

**ILLINOIS**

Chicago, USIL01, Chicago Public Schools Student Science Fair

**BI029** Mechanism of Apoptotic Action of Colloidal Silver and Bromelain on PC12 Cells
# Marcelina Puc, 16, Junior, Lane Technical College Prep High School, Chicago, Illinois, T: Kathryn Beck

**CS047** Evolving Quantum Gomoku Engines
Guochuan Zhang, 15, Sophomore, Lane Technical College Prep High School, Chicago, Illinois, T: Alexander Razborov

**ME059** Colorectal Cancer: Vitamin D Receptor Deficiency Upregulates Expression of Claudin 5
Weipeng Zhang, 17, Senior, Whitney Young Magnet High School, Chicago, Illinois, T: Katherine Rehak

**ME063** Myoblast Encapsulation for Novelty Muscular Dystrophy Gene Therapy
Marquise Walker, 17, Senior, Lindblom Math and Science Academy, Chicago, Illinois, T: Elizabeth Copper

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

**BE311** Active Brain Regions during Sleep using Electroencephalography-Functional Magnetic Resonance Imaging
Sameeksha H. Malhotra, 17, Junior; Grace Yuewen Duan, 17, Junior, Illinois Mathematics and Science Academy, Aurora, Illinois, T: Judith Scheppler

**BI032** Phthalates and Phthalate Alternatives: Effects on Proliferative and Estrogenic Target Genes
Ranjani Sundar, 16, Junior, Illinois Mathematics and Science Academy, Aurora, Illinois, T: Judith Scheppler

**ME312** The Effect of Nitric Oxide on Cellular Adhesion in Head and Neck and Breast Cancer Cells
Philip Nebres, 18, Senior; Ashok Arjunakani, 17, Senior, Illinois Mathematics and Science Academy, Aurora, Illinois, T: Judith Scheppler

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

**CS316** A New General Method of Relational Heuristics Utilizing Agent-Based Collective Intelligence
### Brian Charles Fitzgerald, 16, Junior; Conner Thomas Ruhl, 16, Senior, The Governor French Academy, Belleville, Illinois, T: Christine Halbert Stewart

Macomb, USIL03, Heart of Illinois Science and Engineering Fair

**CS050** Parallel Sorting Algorithms in C Using Open Multi-Processing
# Nathaniel Zietlow, 16, Sophomore, Quest Charter Academy High School, Peoria, Illinois, T: Mary Ward
CS320  Programming an Adaptive Artificial Intelligence Utilizing Neural Networks and the Monte Carlo Tree Search Method  
Trenton Dean Lawrence, 16, Junior; Rush Vincent Hoehne, 17, Junior; Larry David Lane, III, 18, Junior, Delavan High School CUSD 703, Delavan, Illinois, T: Mary Kay Wonders  
Skokie, USIL05, Illinois Junior Academy of Science North Suburban Region 6 Science and Engineering Fair

BI304  The Biological Function of Telomerase in the Discontinuation of Cancer Immortality  
Anne Murray McCarthy, 17, Junior; Kristine Park, 17, Senior, Niles Township West High School, Skokie, Illinois, T: JulieAnn Villa  
Skokie, USIL05, Illinois Junior Academy of Science North Suburban Region 6 Science and Engineering Fair

CB017  The Synthesis of Colicin M using Cell-Free Protein Synthesis  
Reyvin Michael Reyes, 17, Junior, Niles Township West High School, Skokie, Illinois, T: Ruth Gleicher  
Skokie, USIL05, Illinois Junior Academy of Science North Suburban Region 6 Science and Engineering Fair

EA008  Tsunami Mitigation as a Function of Alterations in Bottom Friction  
Naomi Benson, 17, Junior, Deerfield High School, Deerfield, Illinois, T: Judi Luepke  
Springfield, USIL04, Illinois Junior Academy of Science Region X Science Fair

EE058  Micro-pin-fin: A Uniform Temperature Heat Sink  
Itamar Jacob Allali, 17, Senior, Adlai E. Stevenson High School, Lincolnshire, Illinois, T: Christina Palffy

EN313  Designing Whole-Cell Biosensors for the Detection of Heavy Metals  
Cindy Chen, 17, Junior; Mrugami Mahadik, 16, Sophomore, Niles Township West High School, Skokie, Illinois, T: Ruth Gleicher  
Springfield, USIL04, Illinois Junior Academy of Science Region X Science Fair

IN031  The Effect of Surface Temperature on Chemiluminescence  
Kassie Jean Henry, 17, Senior, Southeastern High School, Augusta, Illinois, T: Sara Jane Ramsey

IN042  Chlorophyll vs. Dye-Sensitized Solar Cells: Testing for the Lowest Resistance  
Kelly Marie Arnold, 16, Junior, Southeastern High School, Augusta, Illinois, T: Sara Jane Ramsey

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

AS058  Feed Alternatives for Litopenaeus vannamei  
Abigail Marek, 15, Sophomore, Boone Grove High School, Valparaiso, Indiana, T: Ken Snow

CS069  Object Recognition for the Visually Impaired: Utilization of 3D Sensor Technology to Help the Blind “See”  
Arjun Kundan Dhawan, 14, Freshman, Castle High School, Newburgh, Indiana, T: Radhika Dhawan

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

EV050  Comparative Analysis of Carbon Dioxide Sequestration and Calcium Carbonate Precipitation in Two Species of Cyanobacteria: *Tolypothrix distorta* and *Fischerella muscicola*  
Asmaa Mahoui, 14, Freshman, Eman Schools, Fishers, Indiana, T: Mia Sankari

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

CB042  Inducing Cellular Adhesion via Membrane Targeting of Rap1 Pathway Effectors for Development of Bone Marrow Mobilizing Drug for Chemotherapy Patients  
Adit Chandra, 17, Junior, Carmel High School, Carmel, Indiana, T: Jennifer Marlow

CB053  Viscoelastic Properties of Rat Fibroblast Cells Using Atomic Force Microscopy (AFM)  
Arjun Ramani, 15, Freshman, West Lafayette Junior/Senior High School, West Lafayette, Indiana, T: Marshall Overley

INDIANA

CH038  Synthesis of Magnetically Separable Catalysts and Nanosupports for Synthesizing Transportation Fuels  
Shannon Leslie Hendricks, 17, Junior, Marian High School, Mishawaka, Indiana, T: Ken William Andrzejewski

CH050  Reduction of Toxic Levels of Cadmium Uptake in Tomato Roots and Shoots  
Shane Flanagan, 17, Junior, Castle High School, Newburgh, Indiana, T: Millissa Flanagan

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

AS057  A Study of the Effects of Transplantation of Tissue from Planarian Flatworms Conditioned with Light-Shock Therapy into Naive Planarian Flatworms  
Chloe Sherry, 17, Junior, John Adams High School, South Bend, Indiana, T: Nevin Longenecker

CH039  Solar Cell Efficiency in Relation to Composition and Concentration of Glass Frits in Front Side Silver Pastes  
Walter Pan Li, 17, Junior, Canterbury School, Ft. Wayne, Indiana, T: Bob Brothers
Gary, USIN05, Calumet Regional Science Fair

EE071 An Integrated Software Platform for Intelligent, Autonomous Control of Hyper-Redundant Modular Robotic Systems using Simultaneous Localization and Mapping
Puneeth Naga Sai Krishna Meruva, 16, Junior, Homestead High School, Fort Wayne, Indiana,
T: Matt Elder

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

CH040 Factors that Influence Energies of Simple Hydrocarbons
Tingyue Cui, 15, Sophomore, Terre Haute South Vigo High School, Terre Haute, Indiana,
T: Melanie Huber

MA046 Explaining the Map and the Matrix of the Discrete Lambert Exponentiation
Krishan Shashi Kumar, 17, Senior, Terre Haute South Vigo High School, Terre Haute, Indiana,
T: Melanie Huber

Indianapolis, USIN06, Central Indiana Regional Science and Engineering Fair

AS053 Male Fragility in Drosophila melanogaster with Antennapedia Mutation
Vikas Rammohan Maturi, 15, Sophomore, Carmel High School, Carmel, Indiana,
T: Kimberly S. Vogt

CS061 MobileSoundDiscoveryApp: Mobile Audio Medical Devices and Quantitative-Qualitative Audio Analysis Applications and Designs Using an Autonomous Audio Knowledge Engine
Ryan Chung, 17, Senior, Terre Haute South Vigo High School, Terre Haute, Indiana,
T: Melanie Huber

EN063 A Genetic Engineering Strategy for the Production of Cancer-Therapeutic Compound Libraries
Daniel Solomon Alber, 16, Junior, Penn High School, Mishawaka, Indiana, T: Lynda Rose

EV045 White River Quality and Pollution Study Using Benthic Macroinvertebrate Bioindicators
Muhammed Amir Sankari, 14, Freshman, Eman Schools, Fishers, Indiana, T: Mia Sankari

Indianapolis, USIN50, Hoosier Science and Engineering Fair

CS082 Identifying Pollen Cells Using Computer Analysis: An Aid for Allergists, Immunologists, and Other Health Care Specialists
Adam Clayton Staszewski, 17, Junior, John Adams High School, South Bend, Indiana,
T: Nevin Longenecker

EE081 Unlock Anywhere
Ethan James Anderson, 15, Sophomore, Fort Wayne Area Home School, Fort Wayne, Indiana,
T: Dawn Anderson

EM050 The Effect of Particle Size of Planting Machine Lubricants on Pesticide Abrasion from Corn Seeds
Sarah Elizabeth Cooper, 17, Junior, Lafayette Jefferson High School, Lafayette, Indiana,
T: Joe Ruhl

PS036 Utilizing the Isolated Components, Variation in Mammals, and Treatment Processes of Milk for Grain Yield Enhancement
Jordan Ray Cadle, 18, Senior, Paoli Junior/Senior High School, Paoli, Indiana,
T: Laurie Jo Andry

Muncie, USIN07, East Central Indiana Regional Science Fair

CB052 Targeting Brain Tumor Stem Cells through Natural Antioxidants
Iman Mahoui, 16, Junior, Eman Schools, Fishers, Indiana, T: Mia Sankari

MI060 The Effect of ML 141 and Simvastatin on HUVEC/Fibronectin Binding
Sarah Anika Komanapalli, 17, Junior, Indiana Academy for Science, Mathematics, and Humanities, Muncie, Indiana, T: Susan McDowell

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

AS045 Genetic Variation of Phormia regina in the United States
Dana Lyn Alhaffar, 17, Senior, Eman Schools, Fishers, Indiana, T: Mia Sankari

CB051 Investigating the Culturing Environment of Glioblastoma multiforme
Heya Kaakeh, 16, Junior, West Lafayette Junior/Senior High School, West Lafayette, Indiana,
T: Marshall Overley

Valparaiso, USIN12, Northwestern Indiana Science and Engineering Fair

EN064 Visualizing and Improving the Operation of an Inhaled Medication Chamber Tube
Alexandra Jane Frank, 17, Senior, Marian High School, Mishawaka, Indiana,
T: Ken William Andrzejewski

West Lafayette, USIN11, Lafayette Regional Science and Engineering Fair

PH060 PT-Symmetry Breaking in Periodic Potentials
Charles Haohan Liang, 17, Senior, Carmel High School, Carmel, Indiana, T: Jennifer Marlow
PH073  Detecting Reddening by Dust for Star Clusters in the Andromeda Galaxy
Amy Jessica Cohn, 17, Senior, Park Tudor School, Indianapolis, Indiana, T: Dario Untama

IOWA
Ames, USIA50, State Science and Technology Fair of Iowa
EM033  Waste No More: A Study of the Net Energy Gain of Cellulosic Ethanol from Recycled Matter
# Abby Walling, 16, Junior, West High School, Iowa City, Iowa, T: Carolyn Walling
ME090  Analyzing Novel Functions of Arb1 Ribosome Biogenesis Gene in Saccharomyces cerevisiae: A Suppression Analysis
Priya Kiran Khankolkar, 16, Junior, Keokuk High School, Keokuk, Iowa, T: Arie Schiller
MI044  The Effects of Cholecalciferol of the Survivability of Methicillin-Resistant Staphylococcus aureus
# Micaela Jayne Bryant, 16, Junior, Central Lee High School, Donnellson, Iowa, T: Alicia Schiller
MI049  Silver Nitrate's Effect on Natural vs. Induced Antibiotic Resistance in Escherichia coli
Breanna Kramer, 17, Senior, Central Lee High School, Donnellson, Iowa, T: Arie Schiller
MI050  Isolation of Escherichia coli O157 Proteins that Interact with the Bovine Recto-anal Junction Squamous Epithelial (RSE) Cells
Aparna Sai Ajjarapu, 17, Senior, Ames High School, Ames, Iowa, T: Uma Vithala

Cedar Rapids, USIA01, Eastern Iowa Science and Engineering Fair
CS039  Save Real Objects as Files
Bimba Shrestha, 16, Junior, Maharishi School of the Age of Enlightenment, Fairfield, Iowa, T: Biku Shrestha
PS024  Skim Milk vs. Tobacco Mosaic Virus
Kaylie Nicole Wilson, 16, Sophomore, Central Lee High School, Donnellson, Iowa, T: Alicia Schiller

Sheldon, USIA02, Western Iowa Science and Engineering Fair
ET048  Grass to Gas, Phase III: Study of Calcium Hydroxide Pretreatment on Increasing Cellulosic Ethanol Yield and DDG Feed Value in Prairie Cordgrass and Switchgrass
Eric Koehlmoos, 17, Junior, South O'Brien High School, Paullina, Iowa, T: Kevin Brasser

KANSAS
Wichita, USKS50, Kansas State Science and Engineering Fair
CH047  Explorations in Coal: What Is the Best Way to Utilize Coal's Energy?
Christopher Siegle, 17, Senior, Council Grove High School, Council Grove, Kansas, T: Tracie Schroeder

KENTUCKY
Highland Heights, USKY04, Science and Engineering Fair of Northern Kentucky
MI011  Interactions of Bactericidal Essential Oils
Paige Elizabeth Montfort, 15, Freshman, Notre Dame Academy, Park Hills, Kentucky, T: Mary Ethel Parrott
Lexington, USKY05, Central Kentucky Regional Science and Engineering Fair
ET024  Mars Absolute Positioning System (MAPS): An Innovative Design to Advance the Exploration of Mars
# Matthew Russell, 17, Senior, Home School, Lexington, Kentucky, T: Gina Beth Russell
ET025  Synthesis of Benzodifuran Derivatives for Solar Cells
## Valerie Youngmi Sarge, 16, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson
PH024  Evolution of Novel Magnetism in Single-Crystal Honeycomb Iridates: An Approach towards Quantum Spin Liquids
# Vincent Shian Cao, 18, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson
Louisville, USKY02, Louisville Regional Science and Engineering Fair
CS021  Can the Mind and Body Be Trained Using Virtual Reality?
Nicholas Charles McClure, 18, Freshman, Ballard High School, Louisville, Kentucky, T: Ronda Fields
ME022  Hydrogen Sulfide Ameliorates Hearing Loss during Ischemic Stroke
Chitra Dileep Kumar, 16, Junior, Ballard High School, Louisville, Kentucky, T: Ronda Fields
MI305  Discovery and Genomic Comparison of Bacteriophages BustinJunch and Kimya
   Erin Elizabeth Burba, 16, Junior; Justin Mark Bunch, 17, Junior, Carol Martin Gatton Academy of Mathematics and Science in Kentucky, Bowling Green, Kentucky, T: Rodney King
   Louisville, USKY03, duPont Manual High School Regional Fair

CB011  Age and Glaucoma Induced Changes in Retinal Ganglion Cell Function
   Garrett Elijah McGrady, 16, Sophomore, duPont Manual High School, Louisville, Kentucky, T: Robert Baar

CH311  High Energy Density Anode Electrode for Sodium-Ion Batteries Variability from Lithium-Ion Batteries Energy Efficiencies
   Roshan Duggineni, 16, Sophomore; Rishi Jonnala, 16, Junior, duPont Manual High School, Louisville, Kentucky, T: Robert Baar

EV025  Effects of the Environmental Pollutant Acrylic Aldehyde on Renal Fibrosis
   Sanjana J. Rane, 16, Sophomore, duPont Manual High School, Louisville, Kentucky, T: Robert Baar

EV026  Diabetics Are More Susceptible to Air Pollution: Effects of Urban Particulate Matter with High Glucose on Human Monocytes
   Yue Zhang, 16, Sophomore, duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig

PH041  Spectral Smartphone: Rapid Prototyping Mobile Platform Diffraction Spectrophotometry
   Allen Jiang, 16, Junior, duPont Manual High School, Louisville, Kentucky, T: Robert Baar
   Richmond, USKY50, Kentucky Science and Engineering Fair

AS032  The Behavioral and Physiological Effects of Nicotine on Crayfish
   Samuel Hayden Wycoff, 17, Junior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson

BI045  A Comparison of the Mechanism and Effects of HIF-Targeting Oligonucleotides on Normal and Cancerous Breast Cells
   Katharine Elizabeth Adams, 16, Junior, duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig

CS051  Comparison of Common Linear Pseudorandom Number Generators
   Sarah Molly Schwartz, 15, Sophomore, duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig

EN324  Optimization of Lithium-Sulfur Battery Cathode: Role of Sulfur-Carbon Interaction
   Madan A. Subheeswar, 15, Sophomore; Matthew Carmel Raj, 14, Freshman; Richard Nipun Gunasena, 15, Sophomore, duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig

MA037  Winning the War against Hackers: A Hybrid Asymmetric Cryptographic Algorithm for Safe and Secure Data
   Sasank Venkata Vishnubhatla, 15, Sophomore, duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig

PS030  Engineering Triterpene Methyltransferase in Tobacco
   Caroline Joan Bush, 16, Junior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Heidi Anderson

LOUISIANA
   Alexandria, USLA07, Louisiana Region IV Science Fair

EN305  Waste Power
   Austin Lane Young, 17, Junior; Robert Jesse Rose, 17, Junior, Leesville High School, Leesville, Louisiana, T: Donell Evans

MI031  Purification and Characterization of Outer Membrane Vesicles from Enterotoxigenic Escherichia coli
   Abigail Lauren Dowd, 17, Senior, Louisiana School for Math, Science, and the Arts, Natchitoches, Louisiana, T: Louise Lawson
   Baton Rouge, USLA01, Louisiana Region VII-Science and Engineering Fair

MA039  Mysteries of the Euclidean Algorithm Revealed with Applications
   David Chang Luo, 16, Sophomore, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Lai Cao

PH008  A Novel Method for Quantitative Spectral Classification of R Coronae Borealis Stars
   Marianne Virginia Konikoff, 18, Senior, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina
<table>
<thead>
<tr>
<th>Project Title</th>
<th>Author(s)</th>
<th>School and Location</th>
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<tbody>
<tr>
<td>Differential Evolution and Homes for Hubs</td>
<td>Chi Lan Cao, 14, Freshman, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Tiffany B. Moore</td>
<td>CS052</td>
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<td>A Greener Shade of Grey: The Effects of Fly Ash in Concrete, a Second Year Study</td>
<td>Marygrace Summers Duggar, 17, Junior; Olivia Jane Guidry, 16, Junior, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina</td>
<td>EM319</td>
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<tr>
<td>The Effects of Various Inhibitors on the Dermatophyte, <em>Trichophyton rubrum</em></td>
<td>Aniko Alicia Nowakowski, 16, Sophomore, St. Joseph's Academy, Baton Rouge, Louisiana, T: Linda K. Messina</td>
<td>MI046</td>
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<tr>
<td>SNAP: A Novel Algorithm for Fast Global Sequence Alignment and Database Search</td>
<td>Venkatesh S. Sivaraman, 15, Sophomore, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements</td>
<td>CS005</td>
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<td>Optimization of Blade Angle of Attack of a Low Speed Giromill Vertical Axis Wind Turbine</td>
<td>Kyle L. Dockendorf, 17, Junior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements</td>
<td>EE014</td>
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<td>Exit Velocity of a Sphere Falling in Narrow Tubes</td>
<td>Nicholas Alfredo Larsen, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements</td>
<td>PH004</td>
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<td>Acne Treatments</td>
<td>Angelle Leger, 16, Junior, Alfred M. Barbe High School, Lake Charles, Louisiana, T: Darrell McDaniel</td>
<td>ME002</td>
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<td>Do Air Root Pruning Pots Accelerate Success in a No-Till Garden?</td>
<td>John Austin Ham, 16, Junior, DeRidder High School, DeRidder, Louisiana, T: Connie Conner</td>
<td>PS008</td>
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<td>Comparison of the Foraging Habits of Juvenile <em>Anolis sagrei</em> and <em>Anolis carolinensis</em> Males</td>
<td>Caitlyn Ann Kelly, 17, Senior, Benjamin Franklin High School, New Orleans, Louisiana, T: Mary Gubala</td>
<td>AS046</td>
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<tr>
<td>Alexithymia and Hemispheric Lateralization of Emotional Valence and Verbal Ability</td>
<td>Helene Lovett, 17, Junior, Lusher Charter School, New Orleans, Louisiana, T: Gennarina Santorelli</td>
<td>BE018</td>
</tr>
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</table>
EE041  Ambient Energy
Pedro Gabriel Rivera, 16, Sophomore, Holy Cross School, New Orleans, Louisiana, T: Warren Bernard

EM041  What Is the Effect of Canopy Cover on *Salvinia molesta* and *Salvinia minima*?
Paris Ronique Evans, 17, Senior, Patrick F. Taylor Science & Technology Academy, Avondale, Louisiana, T: Janell Simpson
*Ruston, USLA09, Louisiana Region II Science and Engineering Fair*

ME013  Light It Up
Savannah Elizabeth Floyd, 14, Freshman, Ruston High School, Ruston, Louisiana, T: Stacy Potter
*St. James Parish, USLA06, St. James Parish Science Fair*

CH041  Burning Calories
Daija Gibson, 14, Freshman, St James High School, St James, Louisiana, T: Chelsea Carlos

**MAINE**

*Bar Harbor, USME50, Maine State Science Fair*

EN043  Analyzing the Hemodynamics of the Left Ventricle through MRI-Based Complex Fluid Dynamics Models
Daniel O'Brien, 15, Sophomore, Bangor High School, Bangor, Maine, T: Cary James

ME070  A Novel Device for the Diagnosis of Chronic Transplant Rejection
Demetri Maxim, 16, Sophomore, Gould Academy, Bethel, Maine, T: Peter Southam

ME309  Dnm3l: A New Genetic Factor in Obesity
Andrew Richard Reilley, 17, Junior; Roger Wolcott Van Peski, 18, Senior; Abigail Harvey, 18, Senior, The Maine School of Science and Mathematics, Limestone, Maine, T: Deborah McGann

**MARYLAND**

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

EE094  Designing a Technological Efficient ROV (Remotely Operated Vehicle) to Monitor Non-Point Source Pollution in Rivers and Estuaries
Zachariah Spencer, 17, Junior, W.E.B. DuBois High School, Baltimore, Maryland, T: Julitta Belches
*Glen Burnie, USMD01, Anne Arundel County Regional Science and Engineering Fair*

CS034  Secure Data Encryption Algorithm
David Andrew Kravets, 14, Freshman, Chesapeake Science Point Public Charter School, Hanover, Maryland, T: Janett Echiverri

EM310  Effect of Antifreeze on a Keystone Species
Allison Marie Raines, 15, Sophomore; Sally Albright, 15, Sophomore, South River High School, East Edgewater, Maryland, T: Eleanor Nulud
*Largo, USMD05, Prince George's Area Science Fair*

EE082  Development of a Teleoperation Robot
Mina Fahmi Fahmi, 16, Junior, Great Mills High School, Great Mills, Maryland, T: Jennifer Massagli

ET065  Rain Power
Michael Jose Lopez Chiesa, 18, Senior, Saint Mary’s Ryken High School, Leonardtown, Maryland, T: Elizabeth Schuck

PH315  Flexible Shape Changing (Morphing) Wing
Judah Khary Brooks, 17, Senior; Moises Diaz, 17, Junior, From the Heart Christian School, Suitland, District of Columbia, T: Chrystal Long

PS040  Composting *Halyomorpha halys*
Sinmisola Tinubu, 17, Senior, Eleanor Roosevelt High School, Greenbelt, Maryland, T: Jennifer Massagli
*Silver Spring, USMD03, ScienceMontgomery*

BE016  Differences in Word Usage Patterns between “Well-Recovered” Aphasic Patients and Control Subjects on a Picture Description Task
Daniela Ida Ganelin, 17, Senior, Montgomery Blair High School, Silver Spring, Maryland, T: Angelique Bosse

CS035  Design and Performance Analysis of Optimization Algorithms for Efficient Cryptographic Processing in Secure Internet Routing Protocol
Vinay K. Sriram, 18, Senior, Poolesville High School, Poolesville, Maryland, T: Teresa Stone
MA023  The Speeds of Families of Intersection Graphs
Jessica Shi, 17, Senior, Montgomery Blair High School, Silver Spring, Maryland,
T: Angelique Bosse

ME038  Early Cancer Diagnosis and Treatment through the Detection of Circulating Tumor Cells Using Drop-based Microfluidics
# Neil Davey, 18, Senior, Montgomery Blair High School, Silver Spring, Maryland,
T: Angelique Bosse
Towson, USMD06, Baltimore Science Fair

CB037  Characterization of T Cell Receptor Clonotypes in an SIV Infected Pigtailed Macaque
Darius Andrew Johnson, 18, Senior, Baltimore Polytechnic Institute, Baltimore, Maryland,
T: David Nelson

CS077  Three Dimensional Imaging in a Two Dimensional Domain without the Use of 3-D or Special Glasses: An Experiment to Determine if Increasing Switching Speeds and Vertical Displacement between Alternating Stereoscopic Images Will Further Enhance 3-D Depth Perception
Frank X. Baleno, 15, Freshman, Wilde Lake High School, Columbia, Maryland,
T: Brittany Franckowiak

EM031  Dispersing Oil Slicks: Impact of Droplets on a Floating Oil Layer
Lambert Aryee, 17, Senior, Baltimore Polytechnic Institute, Baltimore, Maryland,
T: Sally Kutzer
Waldorf, USMD04, Charles County Science Fair

BIO23  The Effect of Climatic Change on the Bioluminescence of Dinoflagellates
Cameron Nicholas Connolly, 17, Senior, North Point High School for Science, Technology, and Industry, Waldorf, Maryland, T: Rachelle Harner

MIO26  The Effect of Honeybee Byproducts on Bacteria
Katherine Irene Polk, 16, Junior, North Point High School for Science, Technology, and Industry, Waldorf, Maryland, T: Kathryn Wieczorek
Walkersville, USMD02, Frederick County Science and Engineering Fair

CS053  Indoor Navigation with Maximum Likelihood Classification of Wi-Fi Fingerprints
Noah Christian Pritt, 16, Junior, Pritt Home School, Walkersville, Maryland, T: Mark Pritt

EE061  Electromagnetic Tire Propulsion System
# Alexander William Beall, 17, Junior, Brunswick High School, Brunswick, Maryland,
T: James Kelly

BI023  Dysregulation of MicroRNA Expression in Diabetes
Audrey Isomi Lang, 16, Junior, Edward M. Kennedy Academy for Health Careers, Boston, Massachusetts, T: Derian Esmee Capodagli

MIO21  Novel Engineered Oral Vaccine against HIV/AIDS
Jonathan Zou, 15, Sophomore, Boston Latin School, Boston, Massachusetts,
T: Kathleen Bateman

MIO22  Development of in vitro Multispecies Biofilms with Hydroxyapatite and Artificial Saliva
Terry Gwen Ni, 15, Sophomore, Boston Latin School, Boston, Massachusetts,
T: Kathleen Bateman

Walkersville, USMD01, Massachusetts Region V Science Fair

ME035  Curcumin vs. Cancer: The Effects of Curcumin on MCF-7 Breast Cancer Cells
Katrina Marie Mamaty, 16, Junior, Calvary Chapel Academy, Rockland, Massachusetts,
T: Mary-Jo Doolan

AS023  Developmental Effects of Correlated Color Temperature of Artificial Lights on Painted Lady Butterflies Vanessa cardui
Simiao You, 19, Senior, Holyoke Catholic High School, Chicopee, Massachusetts,
T: Lise LeTellier

CB021  The Hidden Hazard of Infant Formula: Evaluating the Effect of Food Additive λ-Carrageenan on Blastemal Cell Growth and Development in a Dugesia tigrina Model
Akshayaa Kethinni Chittibabu, 16, Junior, Massachusetts Academy of Math and Science at WPI, Worcester, Massachusetts, T: Maria Borowski

CB024  In Search of Genomic Dark Matter: A Novel Method for the Global Identification of Active Regulatory Elements
# Carlo Bocconcelli, 17, Senior, Falmouth Academy, Falmouth, Massachusetts, T: Alison Ament

Massachusetts
Boston, USMA06, Massachusetts Region VI Science Fair

CB023  Dysregulation of MicroRNA Expression in Diabetes
Audrey Isomi Lang, 16, Junior, Edward M. Kennedy Academy for Health Careers, Boston, Massachusetts, T: Derian Esmee Capodagli

MIO21  Novel Engineered Oral Vaccine against HIV/AIDS
Jonathan Zou, 15, Sophomore, Boston Latin School, Boston, Massachusetts,
T: Kathleen Bateman

MIO22  Development of in vitro Multispecies Biofilms with Hydroxyapatite and Artificial Saliva
Terry Gwen Ni, 15, Sophomore, Boston Latin School, Boston, Massachusetts,
T: Kathleen Bateman

Walkersville, USMD01, Massachusetts Region V Science Fair

ME035  Curcumin vs. Cancer: The Effects of Curcumin on MCF-7 Breast Cancer Cells
Katrina Marie Mamaty, 16, Junior, Calvary Chapel Academy, Rockland, Massachusetts,
T: Mary-Jo Doolan

AS023  Developmental Effects of Correlated Color Temperature of Artificial Lights on Painted Lady Butterflies Vanessa cardui
Simiao You, 19, Senior, Holyoke Catholic High School, Chicopee, Massachusetts,
T: Lise LeTellier

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# Carlo Bocconcelli, 17, Senior, Falmouth Academy, Falmouth, Massachusetts, T: Alison Ament
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<tr>
<td>CB025</td>
<td><strong>Triclosan: The Snail's Achilles' Heel</strong></td>
<td>Tess Cushing, 17, Taunton High School, Taunton, Massachusetts, T: Elizabeth Pawlowski</td>
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<td>CB026</td>
<td><strong>Characterization of Gene Expression in p53 Activated Tumor-Initiating Cells</strong></td>
<td>Fan Liu, 15, Fontbonne Academy, Milton, Massachusetts, T: Robert Birch</td>
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<td>EE036</td>
<td><strong>Developing a Cost Effective Solar-Powered Surgical Sterilization System</strong></td>
<td>Maileen Kozak, 16, Westfield High School, Westfield, Massachusetts, T: Renee Sweeney</td>
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<td>EE039</td>
<td><strong>Teachable Robotic Arm</strong></td>
<td>Mark Edward Landergan, 17, Newburyport High School, Newburyport, Massachusetts, T: Sarah Leadbeater</td>
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<td>ME037</td>
<td><strong>Characteristics of Deleterious Mutations in Tumor Suppressor Genes</strong></td>
<td>Nathan Han, 15, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman</td>
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<td>ET054</td>
<td><strong>The Output Power of Hydroelectric Generator Prototypes</strong></td>
<td>Emma Louise Fiore, 15, Joseph Case High School, Swansea, Massachusetts, T: Peter Brock</td>
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<td>ME036</td>
<td><strong>Stiletto Stress: The Effect of Increased Planter Flexion on the Degree of Pronation and Supination in the Ankle</strong></td>
<td>Amy Elizabeth Santos, 16, Taunton High School, Taunton, Massachusetts, T: Elizabeth Pawlowski</td>
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<td>ME032</td>
<td><strong>The Accuracy of Blood Pressure to Determine Lying due to Stress Levels</strong></td>
<td>Samantha Rose Walter, 15, Taconic High School, Pittsfield, Massachusetts, T: Cori Scaduto</td>
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<td>EN030</td>
<td><strong>Endothelial Differentiation of c-kit+ Cardiac Progenitor Cells in Extracellular Matrix-Fibrin Hybrid Hydrogel Scaffolds</strong></td>
<td>Erica Budina, 18, Medford High School, Medford, Massachusetts, T: Jodi Driscoll</td>
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<td>MA022</td>
<td><strong>Base 1.5: Analysis of Properties and Relation to the Collatz Conjecture</strong></td>
<td>Jesse Martin Michel, 17, Massachusetts Academy of Math and Science at WPI, Worcester, Massachusetts, T: Regele Thomas</td>
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<tr>
<td>ME305</td>
<td><strong>The Physiological Effects of Noise Pollution on the Cardiovascular System of D. melanogaster</strong></td>
<td>Marcelo Ferrari, 17, Bancroft School, Worcester, Massachusetts, T: Mary Ann DeMaria</td>
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**MICHIGAN**

*Ann Arbor, USMI01, Southeast Michigan Science Fair*

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<tr>
<td>CB046</td>
<td><strong>Differential Effects of Food Additives on Catalase and Its Close Interactors</strong></td>
<td>Shreya Menon, 16, Skyline High School, Ann Arbor, Michigan, T: Casey Warner</td>
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<td>CS068</td>
<td><strong>Optimizing Computing Power in Predicting an Individual's Response to Certain Toxins</strong></td>
<td>Grace Anne Ganzel, 18, Huron High School, Ann Arbor, Michigan, T: Inhan Lee</td>
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<td>BE315</td>
<td><strong>The Effect of Technology on Teenagers</strong></td>
<td>Grace Elizabeth Brackman, 14, Sydney Corinne Cason, 15, Lakeshore High School, Stevensville, Michigan, T: Lynda Smith</td>
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<td>CB060</td>
<td><strong>Innovative Non-invasive Test for Food Based, Non-IgE-mediated, Allergic Reactions</strong></td>
<td>Bailey Austin Bakerson, 15, Berrien County Mathematics and Science Center, Berrien Springs, Michigan, T: Denise Smith</td>
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</table>
**Detroit, USMI02, Science and Engineering Fair of Metropolitan Detroit**

**AS024**  Toward Understanding the Neural Circuitry Regulating Cold Sensitivity in *C. elegans*, a Two-Year Study  
 Michael Shao, 17, Junior, Detroit Country Day Upper School, Beverly Hills, Michigan, T: Gene Menton  

**BI035**  The Utilization of Bioluminescence for the Diagnosis of Alzheimer’s Disease and Related Tauopathies  
 Andrew David Lekarczyk, 16, Junior; Sam Ilkka, 16, Junior, University of Detroit Jesuit High School, Detroit, Michigan, T: Priscilla Oshikiri  

**EE037**  Enhancing Target Efficiency of Laser by the Integration of a Stabilization System  
 Nathaniel Lewis, 18, Senior, Cass Technical High School, Detroit, Michigan, T: Nadim Bari  

**EE038**  Electronic Anti-Counterfeit Protection using a Pseudorandom Binary Sequence  
 Daniel Jin, 16, Junior, Rochester Adams High School, Rochester Hills, Michigan, T: Eric Lohr  

**EN060**  Assessment of AZ31 for Biodegradable Stent Applications  
 Mahati S. Vavilala, 17, Junior, Novi High School, Novi, Michigan, T: James DiDio  

**ME039**  Cancerous Tumor Identification from MRI Image Analysis  
 Madhurima Das, 17, Senior, Plymouth High School, Canton, Michigan, T: Karen Ludema  

**PH035**  Increased Efficiency in Tip-Enhanced Raman Spectroscopy  
 Anirudh Sridhar, 17, Senior, International Academy, Troy, Michigan, T: David Lyons  

**Flint, USMI03, Flint Area Science Fair**

**ME040**  A Novel In-Clinic Patient- and Cancer- Tailored Targeted Drug Delivery System  
 Jay Harshad Mehta, 18, Senior, Port Huron Northern High School, Port Huron, Michigan, T: Anna Jamison  

**PS021**  The Variation of Carbon Dioxide Levels and the Subsequent Measurement of Dissolved Oxygen to Indicate Photorespiration in Crassulacean Acid Metabolism Plantlife: A Novel Method  
 Aishah Isabelle Ahmed, 15, Sophomore, Port Huron Northern High School, Port Huron, Michigan, T: Arlene Grabbitt  

**Flint, USMI50, Michigan Science and Engineering Fair**

**BI048**  A Novel Treatment for Stroke, Traumatic Brain Injury, Alzheimer’s, and other Neurodegenerative Disease: Sildenafil Promotes Axonal Outgrowth in the CSPG Inhibitory Environment through Modulation of miRNA Levels  
 Guangning An, 17, Senior, International Academy, Troy, Michigan, T: David Lyons  

**PH036**  An Application of Dean's Flow in Spiral Micro Channels for Particle Isolation  
 Vipul Nandigala, 16, Junior, Walled Lake Western, Walled Lake, Michigan, T: Thomas Saloka  

**Kalamazoo, USMI07, Southwest Michigan Science & Engineering Fair**

**EM020**  Experimental Analysis of the Benefits and Drawbacks of Rooftop Agriculture  
 Genevieve Cherie Sertic, 17, Senior, Kalamazoo Area Math and Science Center, Kalamazoo, Michigan, T: Steven Butt  

**EV306**  Bioremediation of the Enbridge Oil Spill through Autochthonous Biostimulation  
 Alexandria Marie Peirce, 17, Senior; Katherine Wu, 17, Senior, Kalamazoo Area Math and Science Center, Kalamazoo, Michigan, T: John Goudie  

**Saginaw, USMI04, Great Lakes Bay Region Science, Technology, and Engineering Fair**

**AS042**  The Effects of Acetaldehyde and Folic Acid on the Development of *Lytechinus variegatus* Zygotes  
 Felicia Nainesh Patel, 16, Junior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Matthew H. Miller  

**MA050**  Functional Equations: Rational Functions and their Matrix Isomorphism  
 Joshua Alan Rhodes, 17, Junior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Stephen Tack  

**MINNESOTA**

**Bemidji, USMN01, Northern Minnesota Regional Science Fair**

**EE034**  The Design Development of an Innovative Multi-Modal Device to Improve Hand Hygiene Rates in Health Care Facilities  
 Ezra D. Grothe, 17, Senior; Richard N. Sather, III, 15, Sophomore, Lincoln High School, Thief River Falls, Minnesota, T: Sherry Miller, Cheryl Winkler-Miller  

**Crookston, USMN05, Western Minnesota Regional Science Fair**

**EV015**  The Effects of Ethinyl Estradiol on *Danio rerio* Embryonic Development  
 Maria Cyr Lorenson, 17, Senior, Perham High School, Perham, Minnesota, T: Shawn Stafki
Duluth, USMN02, Northeast Minnesota Regional Science Fair

AS002  The Use of Quantitative PCR to Determine the Impact of Zygosity (Hemizygotes vs. Homozygotes) on the Fitness and Impact on the Wild of Transgenic Fluorescent Zebrafish
Adrianna Danielle Pollak, 17, Senior, Cloquet Senior High School, Cloquet, Minnesota, T: Cynthia Ann Welsh

AS301  What Effect Does Gender, Tone, and Sound Location Have on the Response Behavior of Neogobius melanostomus (Round Gobies) and the Possibility of Future Trapping of this Invasive Species?
Christine Elizabeth Neumann, 16, Sophomore; Crystal Rae Moynan, 16, Sophomore, Cloquet Senior High School, Cloquet, Minnesota, T: Cynthia Ann Welsh

BE002  Hand Hygiene Gone Viral? A Study of Student Involvement in a Social Media Campaign as a Method of Bringing Hand Hygiene to the Masses
Timothy James Fossum Renier, 16, Junior, Duluth East High School, Duluth, Minnesota, T: Robin Churchill

BE301  Is There a Correlation between Knowledge of Personality Types and How Well Different Personality Types Work Together over Time?
Taylor Rose Leyrer, 16, Sophomore; Lauren Kidder Loeb, 15, Sophomore, Cloquet Senior High School, Cloquet, Minnesota, T: Cynthia Ann Welsh

CS002  How Do Different Factors Affect the Accuracy of Neural Networks in the Binary Decision Making of Cancer Detection?
Lucas Ince, 17, Junior, Lakeville North High School, Lakeville, Minnesota, T: Daniel Ince

EE004  Applying Directional Antennas to the Field of Emergency Communications: A Comparative Performance Analysis
Griffin Nicolas Macris, 14, Freshman, New Prague High School, New Prague, Minnesota, T: Jodi Prchal

EE301  Easily Adjustable Dock System
Ryan Kupietz, 17, Senior; Nicholas Ryan Anderson, 17, Senior; Ronald Lwamba Kitoy, 18, Senior, Shakopee High School, Shakopee, Minnesota, T: Brad Thorpe

ET302  The Effects of Various Adaptations to PEGASUS-I, an Unmanned Drone Carrier
Nathan Lax, 18, Senior; Michael Peter Hirsch, 18, Senior, Saint Mary's High School, Sleepy Eye, Minnesota, T: Patti Braulick

EV010  The Effects of Applying Wastewater Biosolids on Bio Energy Polyculture Test Plots and Various Varieties of Switchgrass, a Two Part Study
Brian A. Prchal, 16, Junior, New Prague High School, New Prague, Minnesota, T: Jodi Prchal

PS007  Organic Homemade Fertilizer: An Analysis of Organically Made Compost and Nutrient Water Compared to Store Bought Fertilizer
Stacy L. Erickson, 17, Senior, New Prague High School, New Prague, Minnesota, T: Jodi Prchal

Minneapolis, USMN04, Twin Cities Regional Science Fair

ME019  Schwann Cell Differentiation from Stem Cells of Neurofibromatosis Patients and Normal Controls
Amrita Mohanty, 17, Junior, Woodbury High School, Woodbury, Minnesota, T: Princesa VanBuren-Hansen

PS011  Developing Transgenic Sugar Beet by Agrobacterium-mediated Gene Transfer
Aditi Das, 17, Senior, Roseville Area High School, Roseville, Minnesota, T: Princesa VanBuren-Hansen

PS012  Globally Utilizing Perennial Intermediate Wheatgrass
Heather Joy Stone, 18, Senior, Mounds View High School, Arden Hills, Minnesota, T: Sonya Schoenfuss

Minneapolis, USMN09, St. Paul Science Fair

CH031  Considering the Green Economy of Recycling Amberlyst-15 Beads
Rosemary Olamide Olatunbosun, 18, Senior, Harding Senior High School, Saint Paul, Minnesota, T: David Tweeten

PS014  Sickly Spuds
Nicolina Mao, 18, Senior, Harding Senior High School, Saint Paul, Minnesota, T: David Tweeten

Minneapolis, USMN10, Western Suburbs Science Fair

CH014  Improved Efficiency of Steam Generation Using Carbon Nanoparticles
Carolyn Kay Jons, 15, Sophomore, Eden Prairie High School, Eden Prairie, Minnesota, T: Carol Snyder
CH037  Greener, More Efficient Synthesis of a Medicinally Applicable 1,2,3-triazole Derivative
Jacob William Levy, 17, Junior; Sofie Mihyun Hostrup Kim, 17, Junior, Breck School, Golden Valley, Minnesota, T: Lois Fruen

EE026  VoltX 2.0: A Rescue Robot that Can Locate and Extract Victims
Jason Jerome Sylvestre, 17, Senior, Benilde-St. Margaret's, St. Louis Park, Minnesota, T: Mark Shireman

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

BI054  Understanding the Mechanism behind Nanoparticle Enhanced Oral Absorption of Chemotherapeutic Drugs
# Priyanka R. Narayan, 18, Senior, Wayzata High School, Plymouth, Minnesota, T: Princesa VanBuren Hansen

CH032  Toward a Total Synthesis of Novel Anti-Cancer Dimentine C
Claire Melinda Simpson, 18, Senior, Breck School, Golden Valley, Minnesota, T: Lois Fruen

ET055  Employing in situ Generated Peracetic Acid and Fungal Biosynthesis to Produce Biofuels
## Jonah Zachariah Butler, 16, Junior, Sibley East High School, Arlington, Minnesota, T: Ann Christine Butler

MI054  Comparative Evaluation of Electrical Strategies for Eradication of Staphylococcus epidermidis Biofilms
# Michelle Elisabeth Marie Campeau, 16, Junior, Mayo High School, Rochester, Minnesota, T: Robin Patel

Rochester, USMN07, Rochester Regional Science Fair

BI019  Effect of Hypoxia on Tumor Cell Proteins
Andrea N. Peterson, 15, Freshman, Mayo High School, Rochester, Minnesota, T: Christin Stegenga

EN019  Dynamic Response of a Human Neck Replica to Axial-Compression Impact Loading
Robert Bruce Kitaoka, 16, Freshman, Mayo High School, Rochester, Minnesota, T: Dan Devine

EV018  Determination of Factors that Impact Clearance of Suspended Particulate Matter (Dust) in Air
# Alanna M. Bram, 16, Junior, John Marshall High School, Rochester, Minnesota, T: Eric Stanslaski

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

EN013  Biofeedback Controller: Virtual Training for Myoelectric Transradial Prosthesis
Matthew Lerdahl, 17, Senior, Coon Rapids High School, Coon Rapids, Minnesota, T: Gary Alexander

ME071  Man and Medical Machine: For Better or Worse
Sophia Brown, 15, Sophomore, Anoka High School, Anoka, Minnesota, T: Kevin Molohon

Winona, USMN06, Southeast Minnesota Regional Science Fair

CH008  Rotation of Polarized Light by Chiral Monosaccharides
Austin Gan Li, 17, Senior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Don Bratton

MISSISSIPPI

Biloxi, USMS01, Mississippi Region VI Science and Engineering Fair

BI039  The Effect of Sodium Chloride on Catalase's Breakdown of Hydrogen Peroxide
Olivia Jeanne Eustice, 15, Sophomore, Ocean Springs High School, Ocean Springs, Mississippi, T: Rene Hill

Booneville, USMS02, Mississippi Region IV Science Fair

MI029  Staphylococcus aureus
# Cecilia Louise Dean, 18, Freshman, Tishomingo County High School, Iuka, Mississippi, T: Malcolm Brown

Greenville, USMS03, Mississippi Region III Science and Engineering Fair

AS015  Effects of the Transgenic and Traditional Corn Plant Development on the Growth Rates and Demographic Parameters of an Evolved Diet Strain of Spodoptera frugiperda (Lepidoptera: Noctuidae)
## Manuela Jojoa-portilla, 17, Junior, Home School, Cleveland, Mississippi, T: Maribel Portilla

EN031  Novel Process for Observing Phase Transformations in and Strengthening Cast Iron via Controlled Cooling
Austin Gan Li, 17, Senior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Don Bratton
Possible Human Impact on Degradation of Surface Water Quality: Novel Bacterial Analysis with Ongoing Chemical and Macroinvertebrate Analyses of Weeks' Bayou Subwatershed
Jane Elizabeth Moore, 17, Senior, Ocean Springs High School, Ocean Springs, Mississippi, T: Bryan Butler

What's in Your Smoothie?
Anna Lauren Carr, 15, Freshman, Starkville Christian School, Starkville, Mississippi, T: Karen Miller Carr

The Effects of Lithium Chloride, Potassium Chloride and Valproic Acid Treatment on the Development of *Drosophila* Oregon-R and Midline Mutant Eyes
Kelly Odom, 17, Junior, Forrest County Agricultural High School, Brooklyn, Mississippi, T: Sandra Leal

"Fishing Out" Polyketide Synthesis Genes from a “Red Tide”-Forming Dinoflagellate
Courtney Eileen Grinnell, 17, Senior, Petal High School, Petal, Mississippi, T: Krystin Holmes

The Effects of Lithium Chloride, Potassium Chloride and Valproic Acid Treatment on the Development of *Drosophila* Oregon-R and Midline Mutant Eyes
Kelly Odom, 17, Junior, Forrest County Agricultural High School, Brooklyn, Mississippi, T: Sandra Leal

The Role of TNF-alpha in the Progression of Diabetic Nephropathy
Alyssa P. Pennington, 18, Senior, Murrah High School, Jackson, Mississippi, T: Jeffrey Stokes

The Use of a Biological Assay to Quantify the Amount of Residual Pesticides after Various Washing Processes
Andrew Owen Neely, 15, Sophomore, St. Andrew's Episcopal School, Ridgeland, Mississippi, T: Sandra Hindsman

The Effect of Weaning Age on Feed Consumption and Rate of Gain in Goat Kids
Lauren Elizabeth Haley, 16, Junior, Chillicothe High School, Chillicothe, Missouri, T: Stacy A. Surber

The Effect of Weaning Age on Feed Consumption and Rate of Gain in Goat Kids
Lauren Elizabeth Haley, 16, Junior, Chillicothe High School, Chillicothe, Missouri, T: Stacy A. Surber

The Math of Cancer: The Effects of Statistical Analysis on P-Value
Haylee Jo Johnson, 16, Sophomore, Southwest Livingston County R-I High School, Ludlow, Missouri, T: Janel Coulson
Hillsboro, USMO09, Mastodon Art/Science Regional Fair

EM039 Examining Productivity and Parameters for Growth of Chlorella vulgaris in Effluent from Small-Scale Wastewater Systems for Potential Biofuel Production

# Nathan Wamsley, 15, Sophomore, Home School, Pacific, Missouri, T: Pamela Wamsley

ET040 Repurposed Residential Scale Wind Turbine with Blade Variance

# Jameilee Rose Buenemann, 17, Junior, Washington High School, Washington, Missouri, T: Elizabeth Hobbs

Jefferson City, USMO02, Lincoln University Regional Science Fair

EV019 To Choose or Not to Choose?: Investigating the Trophic Effects of Thiamethoxam on Euplectrus comstockii when Parasitizing Trichoplusia ni, Year Two

# Ashley Suzanne Wyrick, 16, Sophomore, Tuscumbia High School, Tuscumbia, Missouri, T: Constance Wyrick

ME072 Effect of Bacterial Quorum Sensing Molecule N-3-oxo-Dodecanoyl-L-Homoserine Lactone on Human Pancreatic Carcinoma Cells

Ashwahum, 18, Senior, David H. Hickman High School, Columbia, Missouri, T: Pamela Close

Joplin, USMO03, Missouri Southern Regional Science Fair

BE033 Effect of Interruptive Facebook Use on Working Memory in the 21st Century Learning Environment

Laela Rabab Zaidi, 18, Senior, Joplin High School, Joplin, Missouri, T: Nathan Mutic

EV019 To Choose or Not to Choose?: Investigating the Trophic Effects of Thiamethoxam on Euplectrus comstockii when Parasitizing Trichoplusia ni, Year Two

# Ashley Suzanne Wyrick, 16, Sophomore, Tuscumbia High School, Tuscumbia, Missouri, T: Constance Wyrick

MI055 A Comparative Study of the Antimicrobial & Synergistic Properties of Select Essential Oils and Clinical Disinfectants against Gram-positive & Gram-negative Clinical Isolates in vitro, Year III

# Bryant Jo Heckart, 18, Senior, Seneca High School, Seneca, Missouri, T: Jerry Mac Day

Kansas City, USMO04, Greater Kansas City Science and Engineering Fair

AS028 The Effect of Circadian Genes dbt and dbbt on the Lifespan of Drosophila melanogaster

Andrea H. Dahl, 14, Freshman, Olathe North High School, Olathe, Kansas, T: Elizabeth Esco

CB031 Effect of Shh Signaling on Neonatal Cardiomyocyte Proliferation

Ryansi, 17, Senior, Olathe North High School, Olathe, Kansas, T: Andrew Ising

EE047 A Low Cost Parallel Parking Guidance System Using Ultrasonics

Madison Alexis Nasteff, 17, Junior, Liberty High School, Liberty, Missouri, T: Rebecca Groebe

Saint Joseph, USMO06, Mid-America Regional Science and Engineering Fair

PS015 Acquired Symbiosis of Nitrogen Fixing Gluconacetobacter diazotrophicus in Cereal Grains

Monica Singh, 18, Senior, Central High School, Saint Joseph, Missouri, T: Jay Meyers

Springfield, USMO08, Ozarks Science and Engineering Fair

BI038 The Effects of Lead on Beta-galactosidase Activity

Blaine Alyssle Dennis, 16, Junior, Mansfield High School, Mansfield, Missouri, T: Pam Probert

EM043 Enhancing Nutrient Values of Gryllodes sigillatus for Future Food Sustainability

Ewan John Himark, 18, Senior, Nixa High School, Nixa, Missouri, T: Christina Shepherd

EN322 Improving the Performance of TiO2 Nanorod-Based Dye-Sensitized Solar Cells

Benjamin Liu, 17, Junior; Zhenhua Dong, 15, Freshman; Zhenyu Dong, 15, Freshman, Central High School, Springfield, Missouri, T: Lifeng Dong

St. Louis, USMO07, Academy of Science - Greater St. Louis Science Fair

BI003 The Effect of Caffeine on the Development and Nervous System of Drosophila melanogaster

Kate Hogan, 18, Senior, Parkway Central High School, Chesterfield, Missouri, T: Adam Bergeron

CB002 Investigation of the Genetic Transmission of the Atg1e1 Mutation and Its Effect on Embryogenesis in Arabidopsis thaliana

Ellen Wang, 17, Junior, Parkway North High School, Saint Louis, Missouri, T: Jessica Michael

St. Peters, USMO05, Missouri Tri-County Regional Science and Engineering Fair

CS030 A Novel Method for Determination of Camera Pose Estimation Based on Angle Constraints

Hunter Park, 18, Freshman, Wentzville Holt High School, Wentzville, Missouri, T: Jennifer Mallary

Montana

Billings, USMT01, Billings Clinic Research Center Science Expo

EM036 The Influence of Rural Gravel Roads on Nest Mound Structure and Foraging Distances of Pogonomyrmex occidentalis

Stewart M. Cook, 16, Freshman, Carter County High School, Ekalaka, Montana, T: Linda Rost
**Butte, USMT02, Montana Tech Regional Science and Engineering Fair**

**BI308**  
The Correlation between Docosahexaenoic Acid (DHA) and Cognitive Function in Healthy Teens  
Colin Norick, 15, Freshman; Colter Norick, 16, Junior, Columbia Falls High School, Columbia Falls, Montana, T: Tara Norick

**EE086**  
Constructing an Alternative MIPS Football Helmet Model to Limit Rotational Acceleration from Angular Impact  
Dylan Rossbach, 17, Junior, Hellgate High School, Missoula, Montana, T: Rob Jensen

**MI037**  
Effects of Nanoparticles on Mycobacteriophage Infection  
Robert Jude Lester, 16, Junior, Butte High School, Butte, Montana, T: Sandy Shutey

**Great Falls, USMT04, Montana Region II Science and Engineering Fair**

**CH015**  
Flax Seed Biodiesel, Phase IV: Omega 3 Extraction  
Taylor John Schroeder, 18, Senior, Fairfield High School, Fairfield, Montana, T: Margaret Eller

**EM016**  
Evaluating Petroleum-Contaminated Soil Remediation Methods  
Jacob Thomas Alborano, 17, Senior, North Toole County High School, Sunburst, Montana, T: Amanda Joan Becker

**MI306**  
Assessing Antimicrobial Properties of Selected Local Homeopathic Plants  
Samuel Allen Miller, 16, Junior; Andrew David Ryan, 17, Junior, North Toole County High School, Sunburst, Montana, T: Amanda Joan Becker

**Havre, USMT03, Hi-Line Regional Science and Engineering Fair - MSU-Northern**

**EV020**  
The Effects of Hydraulic Fracturing on Ground Water and Tap Water in the Bakken Formation  
Gabriella Tj Blatt, 15, Freshman, Box Elder High School, Box Elder, Montana, T: Melanie Schwarzbach

**PH068**  
The Effect of Wing Shape and Angle of Attack on Lift Force  
Sheridan Steele Spicher, 14, Freshman, North Star High School, Rudyard, Montana, T: Pam Renaker

**Missoula, USMT50, Montana Science Fair**

**BE020**  
Influence of Age in Response to Emoticon Stimuli Using Facial Electromyographic Technology  
Ellen Guyer, 18, Senior, Carter County High School, Ekalaka, Montana, T: Linda Rost

**CH033**  
Luminescent Quenching by Transition Metal Ions on a Luminescent Surface  
Riley Philip McVey, 17, Junior, Big Sky High School, Missoula, Montana, T: Carmen Hauck

**EV033**  
Sun River Conservation  
Sabia Reiche, 15, Freshman; Serenity Wolfe, 14, Freshman, Simms High School, Simms, Montana, T: Raimund Hahn

**NEBRASKA**

**Hildreth, USNE01, Central Nebraska Science and Engineering Fair**

**ME026**  
How Fast Is Fast?  
Alec Jay Ziebarth, 15, Freshman, Wilcox-Hildreth Public School, Wilcox, Nebraska, T: Marjorie Damitog

**Nebraska City, USNE02, Greater Nebraska Science and Engineering Fair**

**EV022**  
The Effect of Lemnaceae on Overall Water Quality Part II: The Loss of Nitrate Nitrogen through Decomposition  
#  
Brooke Pieke, 19, Senior, Newman Grove Public Schools, Newman Grove, Nebraska, T: Danielle Amen

**MI057**  
Creation of a CTX-M-14/CTX-M-15 Gene Fusion to Determine if an Intrinsic Structural Feature of CTX-M-15 Causes Upregulation of Its Expression  
Archana Meera Varman, 17, Sophomore, Duchesne Academy of the Sacred Heart, Omaha, Nebraska, T: Jake Hervert

**NEVADA**

**Elko, USNV01, Elko County Science Fair**

**ET035**  
Sustainable Energy and Water Purification through the Oxidation of Anaerobic Bacteria  
Benjamin Braunstadter, 18, Junior, Spring Creek High School, Spring Creek, Nevada, T: Sandra Braunstadter

**MI032**  
The Effect of Eustress on Sirtuin 2 Levels in Saccharomyces cerevisiae as a Potential Solution to Aging, Cancer, and Epidemic  
#  
Hannah Kurka Margolis, 17, Sophomore, Elko High School, Elko, Nevada, T: Brian Zeiszler
Las Vegas, USNV02, Southern Nevada Regional Science and Engineering Fair

BE010 The Effects of Psychological Distraction on the Problem Solving Process in the Average Adolescents Mind
Sarah Eva Disalvo, 16, Junior, Coral Academy of Science Las Vegas, Nevada, Henderson, Nevada, T: Bunyamin Cabuk

ME048 Sugar Rush Sugar Crash: Analyzing the Effect of Sugar on Physical and Mental Performance Using ANoVA
Chris Mathews, 14, Freshman, Home School, Las Vegas, Nevada, T: Lisa Mathews

Reno, USNV03, Western Nevada Regional Science and Engineering Fair

EV055 Copper Paint: The Biocide to Marine Life Forms
Holly Darlene Merrill, 16, Sophomore, Earl Wooster High School, Reno, Nevada, T: Holly D. Merrill

MA055 Planning for the Future: Is IB the Answer?
Noel P. Vineyard, 18, Senior, Earl Wooster High School, Reno, Nevada, T: Tim Woodside

ME112 The Role of a Novel Integrin Enhancing Protein Therapy to Protect Skeletal Muscle from Damage and Its Relationship to Fiber Type in a Mouse Model of Duchenne Muscular Dystrophy
Annemarie R. Vogedes, 14, Freshman, Earl Wooster High School, Reno, Nevada, T: Linda Ann Vogedes

NEW JERSEY

Jersey City, USNJ02, Hudson County Science Fair

EN032 Testing Rates/Voltages of Nanofibrous Mats for Dermal Tissue Engineering
Iroshi Sachindini Seneviratna, 17, Senior, Union City High School, Union City, New Jersey, T: Nadia Makar

MI036 Colonial and Motile Advantages of Pseudomonas aeruginosa in the Presence of Flow
Kevin Romero, 17, Senior, Union City High School, Union City, New Jersey, T: Nadia Makar

Lawrenceville, USNJ03, Mercer Science and Engineering Fair

CB013 Investigating MeCP2 Regulation of L1CAM Gene Expression in Neural Stem Cells Derived from a Patient with Rett Syndrome
Ohoyo Kwon, 16, Sophomore, West Windsor-Plainsboro High School South, West Windsor Township, New Jersey, T: Myung-sik Yoo

New Brunswick, USNJ01, North Jersey Regional Science Fair

CB022 Control of Induced Pluripotent Stem Cell Aging by Modulation of Mitochondrial DNA Deletions
Joshua Abraham Meier, 18, Senior, Academy for the Advancement of Science and Technology, Hackensack, New Jersey, T: Robert George Pergolizzi

MA024 Odd Dunkl Operators and nilHecke Algebras
Ritesh Narayan Ragavender, 17, Senior, South Brunswick High School, Monmouth Junction, New Jersey, T: Alexander Palen Ellis

ME306 Nanoparticle-Mediated Gene Delivery via Balloon Angioplasty to Suppress Intimal Hyperplasia
Jenna Rose Diritto, 17, Senior; Serena Margaret Tharakan, 17, Senior, Academy for Medical Science Technology, Hackensack, New Jersey, T: Robert George Pergolizzi

PH022 A Novel Error Correction Scheme in Quantum Computing and Communication
Kelvin Wang, 16, Junior, Academy for the Advancement of Science and Technology, Hackensack, New Jersey, T: Ting Yu

PS022 Cellulose Binding Domains: Novel Implications in Agriculture and Biofuel Production
Alon Millet, 16, Sophomore, Academy for the Advancement of Science and Technology, Hackensack, New Jersey, T: Donna Leonardi

NEW MEXICO

Albuquerque, USAI50, National American Indian Science and Engineering Fair

EE075 Parabolic Solar Water Heater for the Navajo Nation
Deshea Larrensen Joe, 16, Sophomore, Navajo Preparatory School, Farmington, New Mexico, T: Yolanda Garcia Flores

EM054 The Heavy Metal Movement: Measuring the Phytoextraction and Bioaccumulation of Heavy Metals by Pascular virgatum and Schizachyrium scoparium when Grown in Soil Collected at the Tar Creek Superfund Site
McKalee S. Steen, 16, Sophomore, Grove High School, Grove, Oklahoma, T: Keliana Steen
ET061 The Viability of Tree Leaves for Cellulosic Ethanol: Testing Glucose Levels in Select Quercus & Acer saccharum Species
Ryan Thomas Caudill, 16, Sophomore, Grove High School, Grove, Oklahoma, T: Keli Steen

Albuquerque, USNM01, Central New Mexico Regional Science and Engineering Challenge

BI312 Exploring Alzheimer's Prevention
Valerie Perea, 17, Senior; Julie Giannini, 17, Senior, Saint Pius X High School, Albuquerque, New Mexico, T: Rebecca Giron

EE043 Wired on Nitinol: A Truly Green Energy Source
Matthew T. Miller, 15, Sophomore, Rio Grande Enrichment Studies, Albuquerque, New Mexico, T: Kenneth L. Miller

EV043 What Material Best Enhances Soil Microbial Carbon Use Efficiency to Reduce Soil CO₂ Emissions?
Jarek Vincent Kwiecinski, 14, Freshman, Albuquerque Institute for Mathematics & Science at UNM, Albuquerque, New Mexico, T: Michael Harris

Farmington, USNM02, San Juan New Mexico Regional Science and Engineering Fair

EE083 Using Water to Heat a Solar Hogan
Kelly Charley, 15, Freshman, Navajo Preparatory School, Farmington, New Mexico, T: Yolonda Flores

MI075 Is Working in Healthcare Unhealthy?
Levi James Myler, 15, Sophomore, Piedra Vista High School, Farmington, New Mexico, T: Gale Silva

Grants, USNM03, Four Corners Regional Science and Engineering Fair

CS024 Winning Craps
Jacob Ray Alford, 18, Senior, Grants High School, Grants, New Mexico, T: Shelby L. Alexander

ME029 Killed by Sweetness
Karishma Sunil Patel, 14, Freshman, Grants High School, Grants, New Mexico, T: Shelby L. Alexander

Las Cruces, USNM04, Southwestern New Mexico Regional Science and Engineering Fair

EE073 Sustainable Energy for Sustainable Water: Solar Heat Driven Desalinating System for Providing Clean and Safe Water for Rural Areas
Vladislav Sevostianov, 16, Junior, Las Cruces High School, Las Cruces, New Mexico, T: Fritz Wagoner

ME050 Automated ECG Feature Extraction with Mathematical Morphology
Jonah Ng, 15, Sophomore, Las Cruces High School, Las Cruces, New Mexico, T: Donna Roman

Las Vegas, USNM05, Northeastern New Mexico Regional Science and Engineering Fair

BI055 Biofuel Enzymes
Meghan Hill, 17, Junior, School: Monte Del Sol Charter School, Santa Fe, New Mexico, T: Rhonda Ward

MI308 Presymptomatic Detection of Disease
Ashvini Vaidya, 16, Junior; Esteban Luis Abeyta, 17, Junior, Los Alamos High School, Los Alamos, New Mexico, T: Eva Fresquez Abeyta, Stephanie Mitchell

Portales, USNM06, Southeastern New Mexico Regional Science and Engineering Fair

EA011 Development of a Cost-Effective Flowable Fill Material for the Stabilization of Underground Cavities
Chase Kicker, 17, Senior, Carlsbad High School, Carlsbad, New Mexico, T: Deborah Haggerton

Socorro, USNM50, New Mexico Science and Engineering Fair

CH049 Gas Phase Ion Chemistry and Ion Mobility of Pharmaceutical Substances in Counterfeit Formulations: Technology for Measurement and Confidence of Detection
Jeongmin Lee, 16, Junior, Las Cruces High School, Las Cruces, New Mexico, T: Gary Eiceman

CS322 Are You Smarter than a Sentry Gun?: An Investigation of Motion Tracking
Jovan Y. Zhang, 16, Sophomore; Sven Jandura, 17, Junior; William R. Sidley-Parker, 16, Sophomore, Los Alamos High School, Los Alamos, New Mexico, T: Dali Yang

EM053 Save Our Oceans!: Oil Eating Bacteria, Part Four
Michael Patrick Randall, 17, Junior, Mayfield High School, Las Cruces, New Mexico, T: Anne Gardner

ET063 Efficient Energy Harvesting Using Bio-Nanowires
Edward Park, 15, Sophomore, Las Cruces High School, Las Cruces, New Mexico, T: Carole Swickard
PH045  3D Hydrodynamic Simulation of Classical Nova Explosions
Coleman J. Kendrick, 15, Sophomore, Los Alamos High School, Los Alamos, New Mexico, T: Brian Kendrick

PS321  A Computational Model of Tree Growth to Maximize Carbon Sequestration
Eli J. Echt-Silson, 17, Junior; Albert Zuo, 17, Junior, La Cueva High School, Albuquerque, New Mexico, T: Jason DeWitte

NEW YORK
Long Island, USNY02, Long Island Science and Engineering Fair

AS016  Haplotype Variation in Banded Sunfish (*Enneacanthus obesus*) from the Peconic River, Long Island, New York
Allison Mary Murphy, 16, Junior, Sayville High School, West Sayville, New York, T: Maria Brown

BE011  Host Preferences of Wild Northern and Southern *Ixodes scapularis*
Hannah Frankie Stewart, 17, Senior, Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York, T: Mary Lou O'Donnell

BE012  A Comprehensive Study of Dollar Hegemony, Quantitative Easing, and the Foreign Exchange Market
Justin Chase Lafazan, 17, Senior, Syosset High School, Syosset, New York, T: Veronica Ade

BI016  Interrogating SGK3 Function in Cancer
Ken Aizawa, 17, Senior, Jericho Senior High School, Jericho, New York, T: Serena McCalla

CB014  Activation-induced Cytidine Deaminase and Its Role in Reliving the Promethean Dream
Ritayan Chakraborty, 16, Junior, Syosset High School, Syosset, New York, T: Veronica Ade

CB015  Alzheimer's Disease: The Effect of Neuregulin1/ErbB4 Back Signaling on γ-secretase Production
Scott Massa, 16, Junior, Commack High School, Commack, New York, T: Richard Kurtz

CH018  Stoichiometric Laser-Induced Breakdown Spectroscopy for Simple and Cost-Effective Laser Material Fabrication: A Case Study of Polycrystalline Yttrium Aluminum Garnet Ceramics
Matthew Leong Chun, 17, Senior, Jericho Senior High School, Jericho, New York, T: Serena McCalla

CS025  Diagnosis of Abnormalities in 3-Dimensional Mammograms via an Artificial Neural Network
Joshua Michael Zweig, 17, Senior, Commack High School, Commack, New York, T: Richard Kurtz

EA007  Data Sonification with the Seismic Signature of Ocean Surf
Yongpeng Tang, 17, Junior, Smithtown High School East, St. James, New York, T: Maria Zeitlin

EE030  A System for the Prevention of Vehicular Heatstroke
Robert Joseph Myrick, 17, Senior, Sewanhaka High School, Floral Park, New York, T: Mary Alexis Blondrage

EM307  A Model Approach to Harvesting Energy from a Marine Environment: The Engineering of Sediment Microbial Fuel Cells with a Modified Catalyst and Diffusion Layer
Emma Jing Dong, 16, Junior; Caitlin Noelle McCormick, 17, Junior; Grace Karen Lee, 16, Junior, Manhasset High School, Manhasset, New York, T: Peter Guastella

EN025  Growing Spine Implant and Test Method
Harry Paul, 17, Senior, Paul D. Schreiber High School, Port Washington, New York, T: Maria Ezratty

ET306  Comparison of Organized and Randomized Multilayer Films
Andrew Moshova, 16, Junior; Jessica Kim, 17, Junior, Manhasset High School, Manhasset, New York, T: Peter Guastella

EV023  Investigating the Use of Plant Xylem from Angiosperm Wood Species as Organic Water Filters
Varsha Venkatesh, 18, Senior, Jericho Senior High School, Jericho, New York, T: Serena McCalla

MA302  A Regional Analysis of Twitter as an Effective Means to Monitor the Spread of the 2012-2013 Influenza Epidemic
ME027 Quizartinib (AC220) Reverses ABCB1- and ABCG2-Mediated Multidrug Resistance
Kanav Gupta, 16, Junior, Jericho Senior High School, Jericho, New York, T: Serena McCalla

ME028 Too Much of a Good Thing? A Novel Role of Osteopontin as an Anti-Obesity Cytokine and Its Implication in Obesity-Related Disease
Leila T. Chang, 17, Senior, William A. Shine Great Neck South High School, Great Neck, New York, T: James Truglio

MI020 Host-specific Binding of ClfB in Staphylococcal Nasal Carriage
# Amy T. Xu, 17, Senior, Jericho Senior High School, Jericho, New York, T: Serena McCalla

PH023 Velocity Gradients in Relation to Spatial Scales of Star-forming Dense Cores in the Perseus Molecular Cloud
Luhong Li, 17, Senior, John L. Miller Great Neck North High School, Great Neck, New York, T: Alan Schorn

PS018 The Expression and Regulation of AqBANQUO Genes in Aquilegia
Clara Arina Sava-Segal, 17, Senior, John L. Miller Great Neck North High School, Great Neck, New York, T: Marie Van Nieuwenhuizen

New York City, USNY03, New York City Science and Engineering Fair

AS039 The Effects of Four Plant Antioxidants on the Lifespan of Caenorhabditis elegans
Summer Arielle Stoff, 16, Junior, Benjamin N. Cardozo High School, Bayside, New York, T: Brigette Brady

AS051 PCB Effects on Zebrafish Development
Elise Genee Harrison, 17, Senior, John Bowne High School, Flushing, New York, T: Faye Melas

BE031 Using Google Trends to Enhance Predictive Models of Mortgage Delinquency to Mitigate Risk in the Loan Lending Process
Soham Daga, 17, Senior, Stuyvesant High School, Manhattan, New York, T: Ellen Schweitzer

BI046 Development of a Therapeutic Drug for Alzheimer's Disease: A Chemical Approach to Cease Amyloidosis
# Yarim Lee, 16, Junior, Townsend Harris High School, Flushing, New York, T: Philip Porzio

BI313 Cardiolipin-Targeted Peptides Block Alzheimer's Beta-Amyloid Oligomer Toxicity through a Two-Hit Approach: Fibril Formation and Inhibition of Newly Characterized Oxygenase Activity
Margarita Ren, 18, Senior, Yinge Zhao, 16, Junior, Hunter College High School, New York, New York; The Dalton School, New York, New York, T: Gilana Reiss

CB043 A Novel Approach for Metastatic Breast Cancer Therapy: Pharmacological Inhibition of EZH2 Histone Methyl Transferase Activity Suppresses Cancer Stem Cells and Induces Epithelial Phenotype
Sara Sakowitz, 18, Senior, The Brearley School, New York, New York, T: Laurie Seminara

CS065 Search Engine to Map FDA Approved Drugs to Diseases Based on Microarray Data Mined from GEO
# Axel Stephan Feldmann, 17, Junior, Hunter College High School, New York, New York, T: Gilana Reiss

EN051 Deposition of Carbon on Copper Wire: A New Process for the Fabrication of Carbon Microtubes
Burhan Azeem, 17, Junior, Staten Island Technical High School, Staten Island, New York, T: John Davis

EN056 Electrically Characterizing NbSe2 through Soft Micro-Stencil Lithography and Atomic Force Microscopy
# Waqarul Islam, 17, Senior, Stuyvesant High School, Manhattan, New York, T: Rebecca Gorla

EN057 Regulating Podocyte Redifferentiation Using Mechanical and Geometrical Constrains
Mika Sarkin Jain, 16, Junior, Stuyvesant High School, Manhattan, New York, T: Rebecca Gorla

EV040 Assessment of Thirdhand Exposure to Nicotine from Electronic Cigarettes
Lily Wei Lee, 18, Senior, Stuyvesant High School, Manhattan, New York, T: Anne Manwell

ME083 Epithelial Mesenchymal Transition Enhances Perineural Invasion in Pancreatic Adenocarcinoma
Erica Lin, 16, Junior, Hunter College High School, New York, New York, T: Gilana Reiss

ME091 Adolescent Loss of Lis1 Results in Defective Hippocampal Morphology and Distinct Behavioral Deficits Resembling a Schizophrenic-Like Phenotype
# Leighton Braunstein, 17, Senior, The Dalton School, New York, New York, T: Lisa Brizzolara

MI051 Mycobacteriophage TM4 Tape-Measure Protein Blocks Entry into Stationary Phase of Tuberculosis
Libby Ho, 17, Senior, Stuyvesant High School, Manhattan, New York, T: Anne Manwell
**Finalist Directory**

**PS315** Novel Iterative Methodologies in the Search for a Universally-Functional DNA Barcode for Plants
Jaison Jain, 15, Sophomore; Julian Stefan Glowacz, 16, Sophomore, Hunter College High School, New York, New York, T: Gilana Reiss

**Poughkeepsie, USNY01, Dutchess County Regional Science Fair**

**PH062** Refining Preliminary Orbital Determination for Near-Earth Asteroids: Comparison of Fundamental Methods with n-Body Correction
Benjamin Thomas Lei, 18, Senior, Arlington High School, LaGrangeville, New York, T: Tracy Furutani

**Queens, USNY50, New York State Science and Engineering Fair**

**BI041** Elucidating of the Role of Reactive Oxidative Secies (ROS) in TGF-β1 Activation of TRPV1 in the Corneal Keratocyte
Abrar Ali Nadroo, 17, Junior, Syosset High School, Syosset, New York, T: Veronica Ade

**BI310** A Novel Analysis of Alzheimer's Disease: The Effects of a-Lipoic Acid, EGCG and Ibuprofen on Amyloid-beta and Tau in Neurodegenerative Transgenic C. elegans Model
Kimberly Alexis Te, 15 Sophomore; Austen Gregory Te, 16, Junior; Jinyu Wu, 17, Junior, Manhasset High School, Manhasset, New York, T: Alison Huenger

**CB044** Zip1 M Region Phosphorylation Patterning: Implications for Effective Meiosis
Anuhita Basavaraju, 17, Senior, Jericho Senior High School, Jericho, New York, T: Serena McCalla

**CH023** The Design and Synthesis of a Novel N-Co-Mo-MWCNT Fuel Cell Catalyst for ORR in Acidic Conditions
Bryan Christopher Herbert, 18, Senior, Manhasset High School, Manhasset, New York, T: Peter Guastella

**EM321** Engineering a Novel Cimex Lectularius Trapping Mechanism Utilizing Electrospun Recycled Polymers
Daniel Rudin, 17, Junior; Michal Leibowitz, 17, Senior; Jacob Mitchell Plaut, 17, Senior, Half Hollow Hills High School West, Dix Hills, New York; Samuel H. Wang Yeshiva University High School for Girls, Holliswood, New York; Rambam Mesivta High School for Boys, Lawrence, New York, T: Michael Lake

**EN055** Gold Nanoparticles: Efficient Synthesis of Catalytically Active Nanoparticles Using a One-Pot Method
Justin Cheung, 17, Senior, Commack High School, Commack, New York, T: Richard Kurtz

**ET050** New Method for the Prediction of Carbon Nanostructures and the Application Towards Optimizing Electron Transfer Rates in Dye Sensitized Solar Cells
Bailey Liao, 18, Senior, Half Hollow Hills High School West, Dix Hills, New York, T: Michael Lake

**ME085** Development of a Multi-Sensory System to Better Relay Pharmacotherapy Information
Matthew Mark O’Connell, 16, Junior, Commack High School, Commack, New York, T: Allison Offerman-Celentano

**MI033** Elucidating the Interactions between the Envelope Glycoprotein gp41 of HIV-1, gC1qR and C1q: Relevance to HIV-1 Pathogenesis
Stephanie Ying, 17, Senior, Manhasset High School, Manhasset, New York, T: Peter Guastella

**PH057** Fringe E-Fields of Flat and Cylindrical Deflectors and a New Proposal for the Proton EDM Experiment
Kevin Li Huang, 17, Senior, Jericho Senior High School, Jericho, New York, T: Serena McCalla

**Syracuse, USNY06, Central New York Science and Engineering Fair**

**EN061** Reduction of Circulating Tumor Cells by Induction of Apoptosis via a TRAIL-Functionalized, Nanostructured Shunt Device
Olivia Helen Sheppard, 16, Junior, Manlius Pebble Hill School, Dewitt, New York, T: Sue Foster

**Syracuse, USNY10, Dr. Nelson Ying Tri Region Science and Engineering Fair**

**BI033** Cross Kingdom Residue Comparison: A New Method for Identifying and Separating Taxonomic Groups
Nicholas Christian Sass, 17, Junior, Canisius High School, Buffalo, NY, New York, T: Robert Cain
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<tr>
<th>#</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
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<tbody>
<tr>
<td>ET036</td>
<td>Inflatable Airplane Design and Optimization for Low Reynolds Numbers</td>
<td>Scott Alexander Bollt, 16, Sophomore, Potsdam High School, Potsdam, New York, T: Pier Marzocca</td>
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<td>PH067</td>
<td>Photodynamic Therapy Induced Microvascular Changes Assessed by Photoacoustic Microscopy</td>
<td>Hakeem Mohamed Salem, 15, Sophomore, City Honors School at FMP, Buffalo, New York, T: Kelly Hyla</td>
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<td>CB028</td>
<td>Proteasome-Directed Camelid Nanobodies Promote the Degradation of α-Synuclein as a Potential Parkinson's Disease Therapeutic</td>
<td>Ankit Singh Baghel, 17, Junior, The Albany Academies, Albany, New York, T: David Buran</td>
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<td>CS038</td>
<td>Come Code with Codester: A Novel Educational App that Teaches Computer Science</td>
<td>Gili Rusak, 17, Junior, Shaker High School, Latham, New York, T: Jodie Kimbrough</td>
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<td>EE033</td>
<td>Flow Rate vs. Magnetic Field</td>
<td>Suveer S. Desai, 17, Junior, New Hartford Senior High School, New Hartford, New York, T: Anthony Surace</td>
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<td>BE309</td>
<td>Psychosocial Variables Affecting Breast Cancer Patient Quality of Life</td>
<td>Alyson Winter, 17, Senior; Abigail E. Kamen, 17, Senior, Ossining High School, Ossining, New York, T: Valerie Holmes</td>
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<td>BI024</td>
<td>The MAPT H1 Haplotype Is Associated with an Increased Clinical and Neuropathological Severity of Chronic Traumatic Encephalopathy</td>
<td>Adam Z. Illowsky, 17, Senior, Ossining High School, Ossining, New York, T: Valerie Holmes</td>
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<td>BI026</td>
<td>Evidence of Toll-like Receptor Nine-Mediated Amelioration of Amyloid Pathology in a TgSwDI Mouse Model of Alzheimer's Disease</td>
<td>Charlotte Sophia Herber, 17, Senior, Fox Lane High School, Bedford, New York, T: Stephanie Peborde</td>
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<td>CS037</td>
<td>Structural Snapshots of K. lactis Purine Nucleoside Phosphorylase Trapped with Transition State Analog Inhibitors</td>
<td>Samuel Arturo Goldman, 16, Junior, Pelham Memorial High School, Pelham, New York, T: Steven Beltecas</td>
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<td>CB029</td>
<td>Generating iPSCs from Human Adipocytes for Differentiation into Nociceptive Neurons</td>
<td>Elizabeth Boyle Sobolik, 16, Junior, Sleepy Hollow High School, Sleepy Hollow, New York, T: Janet Longo-Abinanti</td>
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<td>CS037</td>
<td>Development of a Novel Machine Learning Algorithm to Monitor Vascular Tissue Transfers Using Speech Recognition Techniques</td>
<td>Ariel Benjamin Kanevsky, 16, Junior, Ossining High School, Ossining, New York, T: Valerie Holmes</td>
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<td>CS062</td>
<td>Predicting Cancer Drug Response Using Nuclear Norm Multi-Task Learning</td>
<td>Ivan Paskov, 18, Senior, Edgemont High School, Scarsdale, New York, T: Maria DeCandia</td>
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<td>EE329</td>
<td>Compressed Air Energy Storage</td>
<td>Erik Raphael Santini, 18, Senior; Matthew Wrubel, 19, Senior, Yorktown High School, Yorktown Heights, New York, T: Michael Blueglass</td>
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<td>ME084</td>
<td>An Exploratory Investigation of microRNA Regulation of ACSL4 in Androgen Deprivation Therapy Resistant Prostate Cancer</td>
<td>Xinxin Du, 18, Senior, Scarsdale High School, Scarsdale, New York, T: Beth Schoenbrun</td>
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<td>ME092</td>
<td>Loss of TDP43 in Motor Neurons Leads to Deficits in Axonal RNAs in an Animal Model of ALS</td>
<td>Karan Desai, 17, Senior, Edgemont High School, Scarsdale, New York, T: Maria DeCandia</td>
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<tr>
<td>MI052</td>
<td>Constructing an HBV Reporter Virus</td>
<td>Alexander F. Kaufman, 18, Senior, Horace Greeley High School, Chappaqua, New York, T: Trudy Gessler</td>
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</tbody>
</table>
MI309 Elucidating the Metabolism and Toxicity of Host-Derived Toxin Methylglyoxal in Mycobacterium Tuberculosis and Mycobacterium Smegmatis
Zhun Che, 17, Senior; Julia Burns Kavanagh, 17, Senior; Luke E. Hellum, 16, Junior, Pelham Memorial High School, Pelham, New York, T: Steven Beltecas

NORTH CAROLINA
Charlotte, USNC01, Charlotte-Mecklenburg Regional Science Fair
EN004 Computational Analysis of the Dynamics in Single-Chain FV Fragments of the Anti-lymphotoxin-β Receptor Antibody upon Various Amino Acid Mutations
Prithvi Potharaju, 16, Junior, Ardrey Kell High School, Charlotte, North Carolina, T: Donald Jacobs
ME011 MUC1 as a Biomarker for TGF-β Inhibition: Investigating the Role of MUC1 in the Switch of TGF-β Function from a Tumor Suppressor to a Tumor Promoter in Pancreatic Ductal Adenocarcinoma
Emily Lorin Ashkin, 16, Junior, Providence Day School, Charlotte, North Carolina, T: Pinku Mukherjee

Durham, USNC02, North Carolina Central Region III Science Fair
CS305 Trailblazer: Cooperative, Infrastructure-Independent Generation of Indoor Floor Maps Using Handheld Android Mobile Devices
Andrew Zhou, 18, Senior; Sanjay Kannan, 17, Senior; Elish Mahajan, 18, Senior, Raleigh Charter High School, Raleigh, North Carolina, T: Rudra Dutta
MI019 Antibiotic Resistance Dissemination Increased by High Frequency of Conjugating Bacteria in Escherichia coli Populations
Jennifer Barbara Wu, 17, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Amy Sheck

Raleigh, USNC50, North Carolina State Science Fair
AS308 Olfactometer and GC/MS Evidence for (E)-2-hexenal as a Semiochemical in the Defensive Secretions of the Kudzu Bug, Megacopta cribraria
Abigail Anne Williams, 16, Sophomore; Carly Onnink, 16, Sophomore, Brevard High School, Brevard, North Carolina, T: Jennifer Williams
CB050 Trail Avoidance, Spatial Pattern Recognition, and Tubule-crossing Efficiency in the True Slime Mold Physarum polycephalum
Hannah Leah McShea, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Amy Sheck
CH035 Gold-Catalyzed Hydroamination of Methylene Cyclopropanes in Enantioselective Drug Synthesis
Christopher Zhen, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Myra Halpin
CS076 A Novel Eye Blinking Based HCI with Statistical Prediction for Wearable Computing
Jenny Lynn Wang, 16, Junior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Robert Gotwals
ME102 The Antimicrobial Efficacy of Nitric Oxide based on Release Rate from Mesoporous Silica Nanoparticles on A. actinomycetemcomitans and S. mutans
Shraddha Rathod, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Myra Halpin
ME103 Atherosclerosis-Inducing Cytotoxin 7-Ketocholesterol Is Mitigated by Exposure to 70-Kilodalton Heat Shock Protein in THP-1 Human Monocyte Cells
Anne Yichen Feng, 17, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Amy Sheck
PH058 The Quantum Hall Effect and Electron Interactions in Graphene Monolayers
Justin Yang, 16, Junior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Myra Halpin
PH061 Keeping It Cool with Nanoparticle Technology
Christopher Dean Karras, 16, Sophomore, Wilmington Christian Academy, Wilmington, North Carolina, T: Beverly Dorey
PS039 The Effect of Heat Stress on Constitutively Expressed Flowering Inhibitor Genes in Arabidopsis thaliana and the Onset of Early Bolting
Jovan Baslious, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Amy Sheck
NORTH DAKOTA
Fargo, USND03, Southeast North Dakota Regional Science and Engineering Fair

AS044  The Observation of Growth Enhancers on the Development and Meat Quality of Sus scrofa
Brennen Eric Boll, 16, Junior, Hankinson Public School, Hankinson, North Dakota,
T: Patty Kratcha

PS034  The Insecticidal Properties of Noxious Weeds
#  Carter Joseph Mauch, 16, Junior, Hankinson High School, Hankinson, North Dakota,
T: Patty Kratcha

Grand Forks, USND05, Northeast North Dakota Regional Science and Engineering Fair

EV054  The Selenoproteome Influences Vulnerability to Environmental Methylmercury: The Potential Perspectives in Relation to Human Diseases
#  Davarshi Nikhil Patel, 17, Senior, Red River High School, Grand Forks, North Dakota,
T: Vyrn Muir

Grand Forks, USND50, North Dakota State Science and Engineering Fair

EV042  The Natural Decontamination of Industrial and Agricultural Water
###  Gage Connor Metzen, 18, Senior, Hankinson Public School, Hankinson, North Dakota,
T: Patty Kratcha

PS035  The Fungicidal Impact of Detrimental Weeds on Soybeans
##  Grady Adam Mauch, 17, Junior, Hankinson Public School, Hankinson, North Dakota,
T: Patty Kratcha

PS037  The Effects of Insecticides on Leptinotarsa decemlineata and Solanum tuberosum
Mya Jo Steinwehr, 14, Freshman, Hankinson Public School, Hankinson, North Dakota,
T: Patty Kratcha

Jamestown, USND04, Southeast Central North Dakota Science and Engineering Fair

EE068  Solar Engine Applications II
#  Sean Michael Loken, 16, Sophomore, Wishek High School, Wishek, North Dakota,
T: Joshua West

EM037  Emission Reduction Using an Activated Carbon Supplement
###  Tyler Gordon Toepeke-Floyd, 18, Senior, Wishek High School, Wishek, North Dakota,
T: Joshua West

Mandan, USND01, Southwest Central North Dakota Regional Science and Engineering Fair

AS043  Supplementing Cattle: Is It Really Worth It? Feeding Heifers in a North Dakota Winter
Seth Kenneth Obritsch, 18, Senior, Belfield Public School, Belfield, North Dakota,
T: Jacob Sven Keck

MI056  Fungus Among Us
Dale Patrick Spilman, 14, Freshman, Mandan High School, Mandan, North Dakota,
T: Julie A. Fleck

Velva, USND02, North Central North Dakota Science and Engineering Fair

ME110  The Effects of Theobromine, Theophylline, Paraxanthine, and Glucose on the Adenosine Circadian Cycle
#  Wyatt Luke Limke, 18, Senior, Lewis and Clark Berthold High School, Berthold, North Dakota,
T: Sarah Kimball Kimball

Williston, USND06, Northwest North Dakota Regional Science Fair

BE037  Hello My Name Is...Happy!
##  Kelsey Kaye Guttormson, 16, Freshman, Tioga High School, Tioga, North Dakota,
T: Debra Ann Moe

EE069  Power Struggle
#  Ryan James Joyce, 18, Senior, Tioga High School, Tioga, North Dakota, T: Debra Ann Moe

OHIO

Archbold, USOH06, Northwest Ohio Science and Engineering Fair

AS009  The Effects of Allium sativum on the Development and Meat Quality of Gallus domesticus
#  Chrysta Noelle Beck, 18, Senior, Pettisville High School, Pettisville, Ohio, T: Donna J. Meller

ET017  Using Piezoelectronics to Convert Energy from a Nontraditional Source: Vibration
#  Travis Benjamin Lysaght, 16, Sophomore, Hicksville High School, Hicksville, Ohio,
T: Kathy Laney

Athens, USOH01, Southeastern Ohio Regional Science and Engineering Fair

PS047  Red Raspberries vs. Gold Raspberries
Mariah Joy Cox, 16, Sophomore, Zane Trace High School, Chillicothe, Ohio, T: Jason Clark
Cleveland, USOH02, Northeastern Ohio Science and Engineering Fair

CS036  A Novel Filter for Tracking Trends in Noisy Real-Time Data
        Michael William Litt, 14, Freshman, Orange High School, Pepper Pike, Ohio, T: Jonathan Litt

EV034  Improving Bioindicators: A New Weight-Length Model for Fish to Provide More Accurate Ecosystem Condition Assessment
        Ya’el Carmel Courtney, 17, Senior, Mount Carmel School, Aurora, Ohio, T: Michael Courtney

ME041  The Effect of Veterinary Vaccines on Lake County and Ohio's Public Health
        Heather L. Walker, 18, Senior, Mentor High School, Mentor, Ohio, T: Lori Cohen

ME042  Alteration in Androgen Receptor Expression by the 3' Untranslated Region
        Dhweeja Dasarathy, 14, Freshman, Hawken School, Gates Mills, Ohio, T: Robert Shurtz

PH037  Utilizing Molecular Dynamics Simulations of Crystalline Poly(3-hexylthiophene) to Study Water Diffusion
        Alexander James Weber, 16, Junior, Saint Vincent's Saint Mary High School, Akron, Ohio, T: Naman Alneimi

Dayton, USOH04, Montgomery County Science and Engineering Fair

AS004  Autism in Fruit Flies II: Behavior of Drosophila mGluR Pathway Mutants
        Elise Nicole Paietta, 15, Sophomore, Carroll High School, Dayton, Ohio, T: R. Abdulla

CS007  Developing Automatic Music Transcription Software
        Michael John Menart, 17, Junior, Carroll High School, Dayton, Ohio, T: Laurie Fuhr

EM017  Developing a Sustainable Water Filtration System for Use in Low Income Countries
        Blué Demessie, 17, Junior, William Mason High School, Mason, Ohio, T: George Sorial

Marion, USOH07, Marion Area Science and Engineering Fair

BI028  Ethanol Production through Biological Pretreatment of Miscanthus sinensis Using Pleurotus ostreatus
        Srinath Vijay Seshadri, 14, Freshman, Village Academy, Delaware, Ohio, T: Jenny Harris

PH044  Fabricating an Artificial Nose using Mesoporous Photonic Crystals
        Achal James Fernando-Peiris, 16, Junior, Mount Vernon High School, Mount Vernon, Ohio, T: Benjamin Lloyd

Shaker Heights, USOH05, Hathaway Brown Upper School Fair

CB009  Analysis of T-cell Proliferation in Lymph Nodes of Lymphopenic Hosts Using 2-Photon Microscopy
        Susie Min, 17, Senior, Hathaway Brown School, Shaker Heights, Ohio, T: Patricia Hunt

EN015  The Creation of Thermally Responsive POEGMA Films
        Dhikshitha Niranjan Balaji, 18, Senior, Hathaway Brown School, Shaker Heights, Ohio, T: Patricia Hunt

PH018  Light-Matter Coupling in Low-Q Optical Cavities: Application to Solar Energy
        Riya Jagetia, 18, Senior, Hathaway Brown School, Shaker Heights, Ohio, T: Patricia Hunt

Upper Arlington, USOH09, Central Ohio Regional Science and Engineering Fair

EM009  Waste Drinks to Biofuel: Using Glucose and Fructose in Fermentation and Anaerobic Digestion for the Production of Ethanol and Methane
        Vishal Reddy Nallanagulagari, 16, Junior, Upper Arlington High School, Upper Arlington, Ohio, T: Laura Brennan

EN308  Modified Quantum Dots for Improved Biocompatibility in the Detection of Cancer
        Ryan H. Huston, 17, Senior; Spandan N. Shah, 17, Senior, Upper Arlington High School, Upper Arlington, Ohio, T: Laura Brennan

ME021  Vitellogenin 6: A Novel Neuroprotective Gene Target for Epilepsy Treatment
        Duy Q. Phan, 17, Senior, Upper Arlington High School, Upper Arlington, Ohio, T: Laura Brennan

Wilberforce, USOH03, Miami Valley Science and Engineering Fair

ME307  A Novel Hybrid Non-invasive Clinical-Signal Processing Technique as Biomarker of Atrial Fibrillation
        Karthik Balaji Chakravarthy, 17, Junior; Rohit Vallabh Chakravarthy, 14, Freshman, Beavercreek High School, Beavercreek, Ohio, T: Carolyn Wenning

OKLAHOMA

Ada, USOK07, East Central Oklahoma Regional Science and Engineering Fair

EM005  Effect of Wind Turbine Blade Length on Noise, Electricity Production, and Temperature Change
        William Ellison, 16, Sophomore, Latta High School, Ada, Oklahoma, T: Susie Edens
Ada, USOK50, Oklahoma State Science and Engineering Fair

**BIO11**  
*You Missed a Spot: Accuracy of Luminol Chemiluminescence to Detect Blood at a Crime Scene using Concealment Techniques and Measurements of False Positives*  
Alexia Dean Benson, 15, Freshman, Grove High School, Grove, Oklahoma, T: Keli Steen

**EV016**  
*A Mycoremediation Study to Alleviate Eutrophication in Agricultural Watersheds*  
Dalinh Tran, 17, Senior, Southmoore High School, Moore, Oklahoma, T: Darla Kay Wyatt

**MI015**  
*Evaluating Resistance to Triclosan™ in Selected Bacteria and Aquatic Samples Isolated from Pre and Post Water Treatment Effluent*  
### J. Gage Holleman, 17, Junior, Cascia Hall Preparatory School, Tulsa, Oklahoma, T: Sally Ann Fenska

Alva, USOK01, Northwestern Oklahoma State University Regional Science Fair

**CS006**  
*Pi to Share: Utilizing the Raspberry Pi as a Home File Server*  
# Connor Joshua Cunningham, 15, Sophomore, Vici High School, Vici, Oklahoma, T: Trisha Salisbury

Bartlesville, USOK02, Bartlesville District Science Fair

**EE012**  
*H.E.R.E. Hyperthermia Endangerment Recognition Equipment: A Study on the Prevention of Vehicular Hyperthermia, Phase Two*  
# Kelly Maria Shelts, 18, Senior, Bartlesville High School, Bartlesville, Oklahoma, T: Betty Henderson

**PH005**  
*The Fast and the Freeziest*  
John Paul Martinez, 15, Sophomore, Bartlesville Mid-High School, Bartlesville, Oklahoma, T: Gary Layman

Edmond, USOK03, Central Oklahoma Regional Science and Engineering Fair

**AS008**  
*Improving Apis mellifera Hive Immunity through Environment Manipulation*  
Rebecca Layman, 18, Senior, Southmoore High School, Moore, Oklahoma, T: Darla Kay Wyatt

Miami, USOK04, Northeastern Oklahoma A&M Science and Engineering Fair

**AS005**  
*Environmentally Induced Epigenetic Transgenerational Inheritance and Gender Dominance in Locomotory Behavior of D. melanogaster*  
### Hannah Pagels, 17, Senior, Grove High School, Grove, Oklahoma, T: Keli Steen

Muskegee, USOK05, Muskogee Regional Science and Engineering Fair

**BE303**  
*Ritalin Me This? A Study of Correlation between Learning Styles of ADD/ADHD Students and Autistic Students*  
Makenna Hukill, 17, Senior; Ashlee Fletcher, 17, Senior, Muskegee High School, Muskegee, Oklahoma, T: Michele R. Hofschulte-Colvin

Wilburton, USOK09, Eastern Oklahoma Regional Science and Engineering Fair

**EV011**  
*Reversing the Effects of Lead on Cellular Models Using EDTA Chelation Therapy*  
Beau Taylor Bingham, 14, Freshman, Cascia Hall Preparatory School, Tulsa, Oklahoma, T: Sally Ann Fenska

OREGON

Bend, USOR08, Central Oregon Community College Regional Science Expo

**BE007**  
*Benefits of the Education Style used in Asian and American Education Systems*  
Hyejin Lee, 19, Senior, Trinity Lutheran High School Bend Oregon, Bend, Oregon, T: Thomas Keith Stueve

Eugene, USOR07, Central Western Oregon Science Expo

**EE084**  
*Comparative Analysis of Piezoelectric Windstalk Designs*  
Eleanor Celia Fadely, 17, Senior, West Salem High School, Salem, Oregon, T: Michael Lampert

**ME018**  
*Evaluation of Ventricular Mass for Hypertrophic Cardiomyopathy Using 4D Echocardiography*  
Hannah Tam, 16, Junior, Winston Churchill High School, Eugene, Oregon, T: Meihua Zhu

Gresham, USOR01, Gresham-Barlow Science Expo

**CS017**  
*A Novel Implementation of Image Processing and Machine Learning for the Early Diagnosis of Melanoma*  
Elizabeth Zhao, 17, Senior, Jesuit High School, Portland, Oregon, T: Jennifer Cournia

**ET018**  
*Creating Electricity through the Use of Natural Drafts Produced by Hot Water*  
Grace Dean Ray, 18, Senior, Gresham Union High School, Gresham, Oregon, T: Stephen Scannell

**PH019**  
*Novel Automated Next-Generation Multijunction Quantum Dot Solar Panel Designs Using Monte Carlo-Based Modeling*  
### Valerie S. Ding, 17, Junior, Catlin Gabel School, Portland, Oregon, T: Veronica Ledoux
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<th>Finalist Directory</th>
<th>Intel ISEF 2014</th>
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<td>Hillsboro, USOR04, Beaverton-Hillsboro Science Expo</td>
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<tr>
<td><strong>BIO10</strong></td>
<td>PNA for Use in Small-Molecule Libraries Derived by Combinatorial Solid-Phase Synthesis: Reaction Optimization</td>
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<td>Richik Neogi, 17, Senior, Merlo Station School of Science and Technology, Beaverton, Oregon, T: Bernadette Buxton</td>
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<td><strong>CH009</strong></td>
<td>Synthesis of Aspirin and the Importance of the Strength of the Acid Catalyst</td>
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<td>Ryann Nicole Fadden, 18, Senior, Century High School, Hillsboro, Oregon, T: Miles Hudson</td>
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<td><strong>CS013</strong></td>
<td>An Iterative Model for Developing Network-on-Chip (NoC) Architectures</td>
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<td>Anusha Pai, 16, Junior, Westview High School, Portland, Oregon, T: Debbie Cooper</td>
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<td><strong>PH011</strong></td>
<td>Frequency Modulation Feedback Control for Near-Field Acoustic Characterization of Mesoscopic Fluid Films</td>
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<td>Pramith Sai Devulapalli, 17, Junior, Westview High School, Portland, Oregon, T: Debbie Cooper</td>
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<tr>
<td>Portland, USOR02, Portland Public Schools Science Expo</td>
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<tr>
<td><strong>EE053</strong></td>
<td>Implementation and Evaluation of a New Routing Algorithm for Networks on Chip</td>
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<td>Lukas Gernot Schwab, 16, Junior, Lincoln High School, Portland, Oregon, T: Meg Kilmer</td>
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<td><strong>EV036</strong></td>
<td>Monitoring Ocean Microscopic Organic Material: Assessing Large-Scale Ecological Disruption on Annual Chl-a, POC, and PIC Fluctuation Equilibrium</td>
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<td>Jinsong (Tony) Yan, 17, Senior, Cleveland High School, Portland, Oregon, T: Matthew Staab</td>
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<tr>
<td><strong>MA029</strong></td>
<td>Development and Comparative Analysis of Machine Learning Algorithms for Breast Cancer Detection</td>
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<td>Clemen Deng, 16, Sophomore, Lincoln High School, Portland, Oregon, T: Yuchen Huang</td>
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<tr>
<td>Portland, USOR05, Aardvark Science Exposition</td>
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<td><strong>BE304</strong></td>
<td>Capacity Limits of Working Memory: The Impact of Multitasking on Cognitive Control and Emotion Recognition in the Adolescent Mind</td>
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<td>Alexandra Ulmer, 17, Junior; Sarayu Caulfield, 16, Junior, Oregon Episcopal School, Portland, Oregon, T: Peter Langley</td>
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<td><strong>EN011</strong></td>
<td>The Fabrication and Characterization of Short and Long Term Memory Proton Induced Thin Film Synaptic Transistors</td>
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<td>Harsha Sudarsan Uppili, 17, Senior, Oregon Episcopal School, Portland, Oregon, T: Peter Langley</td>
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<td><strong>ET016</strong></td>
<td>From Waste to Electricity and Hydrogen Gas: A Novel Power Management Device for Microbial Fuel Cell-Microbial Electrolysis Cell Coupled Systems</td>
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<td>Ajay Krishnan, 18, Senior, Oregon Episcopal School, Portland, Oregon, T: Catherine Mollousseau</td>
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<td><strong>MA008</strong></td>
<td>Hybridized Characteristic 3 Galois Field Arithmetic for Elliptic Curve Cryptography, Phase III</td>
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<td>Vinay Sridhar Iyengar, 18, Senior, Oregon Episcopal School, Portland, Oregon, T: Bevin Colleen Daglen</td>
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<td>Portland, USOR50, Intel Northwest Science Expo</td>
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<td><strong>CH042</strong></td>
<td>Novel Synthesis and Characterization of Antimony and Lithium Doped Tin Dioxide Nanocrystals Achieving Record Gas Sensor Performance</td>
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<td>Nikhil Murthy, 14, Freshman, Catlin Gabel School, Portland, Oregon, T: Veronica Ledoux</td>
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<tr>
<td><strong>EE074</strong></td>
<td>Generalized Decision Functions for Synthesis of Multi-level Logic Circuits Realized by Memristor Imply Gates</td>
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<tr>
<td>Anika Raghuvanshi, 16, Junior, Jesuit High School, Portland, Oregon, T: Jennifer Cournia</td>
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<tr>
<td><strong>EM038</strong></td>
<td>The Efficiency of Ferromagnetic Nanoparticles and Chlorella Algae in the Remediation of Oil Spills</td>
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<tr>
<td>Sahil Veeramoney, 14, Freshman, Oregon Episcopal School, Portland, Oregon, T: Catherine Mollousseau</td>
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<tr>
<td><strong>EN054</strong></td>
<td>A New Methodology for Laser Reduced Graphene as a Catalyst on the Counter Electrode of Dye Sensitized Solar Cells</td>
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<tr>
<td>Meredith Anne Loy, 17, Junior, Oregon Episcopal School, Portland, Oregon, T: Peter Langley</td>
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<tr>
<td><strong>ME098</strong></td>
<td>Alzheimer's Disease Distribution in the Northwest in Relation to Microclimates, A Second Year Epidemiological Study</td>
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<tr>
<td>Talia Alyssie Lichtenberg, 16, Sophomore, West Linn High School, West Linn, Oregon, T: Amy Schauer</td>
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<tr>
<td><strong>MI064</strong></td>
<td>Novel Treatment of Chronic Bacterial Infection: Investigation and Multi-Compound Inhibition of Acyl-homoserine Lactone-Based Quorum Sensing in Pseudomonas aeruginosa and Its Role in Biofilm Development in vitro</td>
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<tr>
<td>Nicholas Paul Miller, 17, Junior, West Linn High School, West Linn, Oregon, T: Amy Schauer</td>
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</table>
West Linn, USOR06, CREST-Jane Goodall Science Symposium

CS014  Design and Engineering of a User-Centric Information System to Streamline Communication between Students and Their Teachers
#  Milo McSherry Webster, 17, Senior, West Linn High School, West Linn, Oregon, T: Wind Lothamer

EN012  The VP (Ventriculoperitoneal) Shunt Circuit
Jennifer Lauren Cramer, 18, Senior, West Linn High School, West Linn, Oregon, T: Jonathan Davies

MI314  Targeting Unique Spectral Absorptions through Multi-Treatment Laser Therapies for Corresponding Differential Mortality Rates between Escherichia coli and Micrococcus luteus Bacteria
Melanie A. Martinsen, 16, Junior; Shana R. Feltham, 17, Junior, West Linn High School, West Linn, Oregon, T: Nancy Monson

Pennsylvania

Harrisburg, USPA01, Capital Area Science and Engineering Fair

BE038  Healthy Youth: Effect of Physical Activity and Sleep Patterns on Physical and Mental Well-Being in Adolescents
Grace Hwang, 16, Junior, Hershey High School, Hershey, Pennsylvania, T: Jason Ambler

CB045  Lights, Nanocarrier, Crosslink! A Novel Nanocarrier for Drug Delivery in Cancer Treatment
Nancy Wang, 16, Junior, Hershey High School, Hershey, Pennsylvania, T: Jason Sibbach

ET049  Go with the Flow: Examining the Potential of Continuous Flow Microbial Fuel Cells
Patrick Myers, 18, Senior, Carlisle High School, Carlisle, Pennsylvania, T: Robert Barrick

Lancaster, USPA02, North Museum Science and Engineering Fair

EE092  The Engineering and Programming of a Novel Robotic Exoskeletal Joint Enhancement Apparatus
#  Matthew Campagna, 17, Junior, Lancaster Catholic High School, Lancaster, Pennsylvania, T: Vasantha Kittappa

ME086  Are Sialic Acid Levels Altered in Human GM3 Synthase Deficiency?: Comparison to Ganglioside GM3 Levels in Amish Infantile-Onset Epilepsy Syndrome
Jenny Taylor Eurich, 18, Senior, Elizabethtown Area High School, Elizabethtown, Pennsylvania, T: Theresa Swenson

Philadelphia, USPA03, Delaware Valley Science Fairs

CB039  Nano-Formulated Quercetin: A Novel Therapy for Neuroblastoma by the Re-expression of RIZ1
Priyanga Selvakumar, 17, Senior, Marple Newtown High School, Newtown Square, Pennsylvania, T: Christine Roy

CB306  Loss of TSC2 Signals for Altered Macrophage Function within Lymphangioleiomyomatosis: A Role for VEGF-D?
Ruchi Asthana, 17, Senior; John Cannon Gow, 17, Senior, High Technology High School, Lincroft, New Jersey; Lawrence High School, Lawrenceville, New Jersey, T: Michael Roche

CH034  Antimalarials: Modeling the Next Generation Inhibitors
Jimmy Thomas Olsen, 15, Sophomore, La Salle College High School, Wyndmoor, Pennsylvania, T: Charles Cirelli

CS055  Modifying the One-Time Pad Cryptosystem for Practical Use
Gavin Rees, 14, Freshman, Germantown Academy, Fort Washington, Pennsylvania, T: Sarah Smith

CS056  Coordinate Descent in Two Dimensions for Protein Loop Closure
#  Justin Yat-Fung Wong, 17, Junior, Germantown Academy, Fort Washington, Pennsylvania, T: Susanne Johnston

EE085  Shoe Charger for Cell Phones: Generating Sufficient Battery Power through Everyday Walking
Queenie Luo, 16, Junior, High Technology High School, Lincroft, New Jersey, T: Michael Roche

EN045  A PEEK into the Future: Advanced Materials for Orthopedic Implants
Ralph Ignacio Lawton, 15, Sophomore, PA Leadership Charter School, West Chester, Pennsylvania, T: Kathleen Sundquist

EV046  Sun In ... Water Out!: Light Absorbing Nanoparticles Dramatically Enhance Vaporization in Solar Desalination
Reeves Balderson, 14, Freshman, Moorestown High School, Moorestown, New Jersey, T: Eugene Nicolo
ME075  A Novel Study on Behavioral and Reproductive Consequences of Embryonic Exposure to BPA and BPS in the *C. elegans* Model
## Bansri Manesh Patel, 17, Senior, Sussex Technical High School, Georgetown, Delaware, T: Michele Thomas

MI053  Effects of Pollutants and Changes in pH on the Bioluminescence of *Vibrio fischeri*: A Novel Bioassay for Water Pollution Detection
Shayan Daniel Farmand, 14, Freshman, Methacton High School, Eagleville, Pennsylvania, T: Robert Helm

MI072  Development of microRNA Cancer Therapeutics: miR-17 and miR-19 Inhibition in Myc-driven Hepatocellular Carcinoma
Tiffany Rose Perumpail, 17, Senior, High Technology High School, Lincroft, New Jersey, T: Michael T. Roche

PH063  Finding the Minimal Length for a Conductive, Random Network of Wires
Milind Jagota, 16, Sophomore, Liberty High School, Bethlehem, Pennsylvania, T: Maureen Leeson

PS038  Unraveling the Mechanisms of Arsenic-Induced Stress in Rice (*Oryza sativa L.*) and Assessment of Potential Alleviation by Silicon Addition
Rohith S. Venkataraman, 16, Junior, The Charter School of Wilmington, Wilmington, Delaware, T: Rose Lounsbury

*Pittsburgh, USPA04, Pittsburgh Regional Science and Engineering Fair*

BI034  Omega-3 Fatty Acids Benefit Microglial Responses to Myelin Pathology
Songela Wenqian Chen, 17, Junior, North Allegheny Senior High School, Wexford, Pennsylvania, T: Bruce Allen

CS057  Fuzzy Logic Based Web Browser for the Motor Impaired
Suvir Prakash Mirchandani, 14, Freshman, Fox Chapel Area Senior High School, Pittsburgh, Pennsylvania, T: Gregory Schubert

MA040  The Impact of Demand Elasticity on the Downs-Thomson and Braess Paradoxes
# Rishi Suvir Mirchandani, 17, Junior, Fox Chapel Area Senior High School, Pittsburgh, Pennsylvania, T: Gregory Schubert

PH053  Piezoforce Imaging of Confined Oxide Nanowires
Akash Levy, 17, Senior, Taylor Allderdice High School, Pittsburgh, Pennsylvania, T: Janet Rossel Waldeck

*Reading, USPA05, Reading and Berks Science and Engineering Fair*

EE062  Re-Design of the Automatic CPAP Hose and Mask Washer
# Andrew Gregory Przyjemski, 17, Junior, Governor Mifflin High School, Shillington, Pennsylvania, T: Jennifer Stinson

MA042  A New Method of Discovering Mathematical Proofs
## Matthew Adam Weidner, 18, Senior, Brandywine Heights Area High School, Topton, Pennsylvania, T: Kevin Dolan

*York, USPA06, York County Science and Engineering Fair*

EN046  Calcium Alginate and Polyacrylamide Hydrogels as Antibiotic Drug Delivery Devices
Katelyn Salotto, 15, Sophomore, Dallastown Area High School, Dallastown, Pennsylvania, T: Heather Lloyd

ME076  Do Brainwaves Have an Effect on Cognitive Abilities?
Alexander Feistritzer, 16, Sophomore, Central York High School, York, Pennsylvania, T: Dianna Guise

*RHODE ISLAND*

Warwick, USRI50, Rhode Island Science and Engineering Fair

CS046  What's Your Problem? Automatically Summarizing Scientific Research with Open Problems
### Cassidy Laidlaw, 17, Senior, Barrington High School, Barrington, Rhode Island, T: Diana Siliezar-Shields

PH049  Visualization of the Tidal Locking Phenomenon through Simulation
Seha Choi, 16, Sophomore, Portsmouth Abbey School, Portsmouth, Rhode Island, T: Robert Rainwater

*SOUTH CAROLINA*

Aiken, USSC01, Central Savannah River Area Science and Engineering Fair

AS017  Deer's Preference: Trophy Rock or Bio Rock
Reese Nelson King, 16, Sophomore, Home School affiliated with Palmetto Independent Educators, Aiken, South Carolina, T: Susie Hathcox King
BE029 Light Speed: A Measure of Ocular Phototransduction Using Pulsed Light Emitting Diodes
Ashley Maye Hamlin, 16, Sophomore, Hilton Head Island High School, Hilton Head Island, South Carolina, T: Nancy Clouse

EM026 The Effects of Iron Seeding on Phytoplankton and Zooplankton Populations, and on Water Chemistry
Jackson Stanton Richard, 15, Sophomore, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browning

MI043 Let Food Be Your Medicine and Medicine Be Your Food
Brianna Elizabeth Caspersen, 17, Senior, Hilton Head Preparatory High School, Hilton Head Island, South Carolina, T: Angela Taylor

MI045 Developing an Antibacterial Wipe with Copper Species to Prevent the Growth of Escherichia coli
Julia Carol Nahman, 18, Senior, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browning

PH055 Reducing the G-force and Traumatic Brain Injuries on Soccer Players through the Use of Headgear
Lucas Patrick McMillan, 17, Junior, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browning

SOUTH DAKOTA

Aberdeen, USSD01, Northern South Dakota Science and Math Fair
EE322 Magnetic Mayhem
Robert Marc Seitz, 17, Junior; John Nelson Wieland, 17, Junior, Central High School, Aberdeen, South Dakota; T: Saundra Anderson, Charles Hermansen

ME045 Does Aspartame or Insulin Affect the Regeneration of Planarian Worms?
Darienne Lovern Frericks, 15, Sophomore, Northwestern High School, Mellette, South Dakota, T: Denise Mary Clemens

ME069 The Effect of Qigong-Chinese Breathing Exercise of the Forced Vital Capacity of Participants with Different Breathing Habits
Emma Marie Johnson, 18, Senior, Central High School, Aberdeen, South Dakota, T: Charles Hermansen

Brookings, USSD02, Eastern South Dakota Science and Engineering Fair
AS041 The Science of Anxiety, Phase II: The Effects of Physiological and Psychological Stress Factors on Short-Term Memory Performance in Pomacea diffusa
Benjamin Michael Hummel, 17, Junior, Florence School, Florence, South Dakota, T: Jim Leonard Chilson

BE040 Self-induced Sleep Loss: A Novel Risk Factor for Nighttime Food Desire in Adolescents and the Association with Brain Dopamine Signaling and Obesity
Zarin Ibnat Rahman, 17, Senior, Brookings High School, Brookings, South Dakota, T: Julie Steen

CB054 Effects of Glucose Concentration on Macrophage Growth and Macropinocytosis
Katharine M. Young, 17, Junior, Brookings High School, Brookings, South Dakota, T: Julie Steen
EV048  Which Grass Could Help Reduce Global Warming?
Connor James Henze, 16, Sophomore, Elk Point Jefferson High School, Elk Point, South Dakota, T: Karlene Lanae Stabe

Mitchell, USSD04, South Central South Dakota Science and Engineering Fair

AS033  CowChips: A Comprehensive Bovine Health and Location Information Network
Justin Nicholas Krell, 17, Junior, Plankinton High School, Plankinton, South Dakota, T: Robert Sprang

Rapid City, USSD03, High Plains Regional Science and Engineering Fair

PS027  Evaluating the Effectiveness of Anthocyanins as Sunscreen, Phase Two
Julie Anne Boyle, 18, Senior, Avon High School, Avon, South Dakota, T: Paul Kuhlman

AS033  Which Grass Could Help Reduce Global Warming?
Connor James Henze, 16, Sophomore, Elk Point Jefferson High School, Elk Point, South Dakota, T: Karlene Lanae Stabe

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Rapid City, USSD03, High Plains Regional Science and Engineering Fair

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Julie Anne Boyle, 18, Senior, Avon High School, Avon, South Dakota, T: Paul Kuhlman

TENNESSEE
Chattanooga, USTN01, Chattanooga Regional Science and Engineering Fair

EN028  Developing a Low Cost Prosthetic Battery Charger
Tanay Patri, 16, Sophomore, McCallie School, Chattanooga, Tennessee, T: Nancy Olenchek

PS028  The Xylent Filter
Shailey Shah, 14, Freshman, Chattanooga School for the Arts and Sciences, Chattanooga, Tennessee, T: Kelly Davis

Cookeville, USTN02, Cumberland Plateau Regional Science and Engineering Fair

BI050  Effect of Trehalose and Poly (lactic-co-glycolic acid) (PLGA) Microparticles on the Release Kinetics of Hydrophobic Drugs in Polyurethane Scaffolds
Michelle Lu, 18, Senior, School for Science and Math at Vanderbilt, Nashville, Tennessee, T: Mary Loveless

MI040  The Effect of Benzquinone on the Growth of Staphylococcus epidermidis
Jacob McKinney Smith, 16, Junior, Cascade High School, Wartrace, Tennessee, T: Roy Cox

Cookeville, USTN02, Cumberland Plateau Regional Science and Engineering Fair

EE070  Harnessing Earth's Power through Recycled Materials
Kirsey Potter, 16, Sophomore, Jackson County High School, Gainesboro, Tennessee, T: Sally Rodgers

MA053  Do You Get What You Pay For?
Margaret Elizabeth Mahaffey, 16, Sophomore, Dekalb County High School, Smithville, Tennessee, T: Kevin Burchfield

Jackson, USTN03, West Tennessee Regional Science and Engineering Fair

CH054  Biomass to Biofuels: An Economic Study
Rachel Marie Baker, 15, Sophomore, Camden Central High School, Camden, Tennessee, T: Karen Campbell Gautier

Knoxville, USTN04, Southern Appalachian Science and Engineering Fair

CS323  Predicting Epileptic Seizures Using an Android™ Application
Maria Magdelene D’Azevedo, 18, Senior; William Isaac MacGillivray Mason, 18, Senior, Oak Ridge High School, Oak Ridge, Tennessee, T: Frank Wood

PH078  A Mathematical Analysis of the Wright Brother’s Wind Tunnel Tests
Christopher Glenn Romanoski, 17, Junior, Oak Ridge High School, Oak Ridge, Tennessee, T: Frank Wood

Memphis, USTN05, Memphis-Shelby County Science and Engineering Fair

EM051  Removal of Pollutants from Wastewater Effluent using Activated Rice Husks
Joshua Lin, 16, Junior, Houston High School, Germantown, Tennessee, T: Amy Smith

TEXAS
Austin, USTX13, Austin Energy Regional Science Festival

CB302  Utilizing Homologous Simplicial Complexes to Model Genomic Data
Jessica Wang, 18, Senior; Ying Liu, 18, Senior, Liberal Arts and Science Academy High School, Austin, Texas, T: Amy Moore
CH303  On the Synthesis and Predictive Modeling of Thermostable Pigments Utilizing Silica Extracted from Rice Husk Biowastes
#  Caroline Fang Gao, 16, Junior; Lily Xu, 16, Junior; Susan Xu, 16, Junior, Plano West Senior High School, Plano, Texas; Liberal Arts and Science Academy High School, Austin, Texas; Kingwood High School, Kingwood, Texas, T: Aaron Cleveland, Neil Milburn, Amy Moore

EN014  Optimizing Natural Gas Separation and the Haber-Bosch Process with Thermally Rearranged Polymers: Effects of Morphology and Chemical Structure on Free Volume and Transport Properties of HAB-6FDA Structures
#  Advaith Anand, 16, Senior, Liberal Arts and Science Academy High School, Austin, Texas, T: Amy Moore

MA011  Optimal Therapy Design for Pancreatic Cancer Using a Boolean Network-Based Simulation
Chaarushena Deb, 17, Senior, Liberal Arts and Science Academy High School, Austin, Texas, T: Amy Moore

MI013  A Novel Response to Antibiotic Resistance: Application of Microparticles and AC Currents
Pia Sen, 17, Junior, Liberal Arts and Science Academy High School, Austin, Texas, T: Amy Moore

PH013  Nova Delphini 2013: A Backyard Analysis of a Classical Nova
#  Piper Michelle Reid, 17, Senior, Dripping Springs High School, Dripping Springs, Texas, T: Kimberly G Reid
Brownsville, USTX04, Rio Grande Valley Regional Science and Engineering Fair

BI004  Copper Chelation as a Possible Atherosclerosis Treatment: Finding the Optimal Therapy
#  Mashad Arora, 16, Junior, Science Academy of South Texas, Mercedes, Texas, T: Rosario Lozano

CB005  Characterization of HeLa Cells Lacking Mitochondrial DNA
Ji Hyun Byun, 17, Junior, Science Academy of South Texas, Mercedes, Texas, T: Rosario Lozano

PS306  Algaenius
Kevin Martinez, 18, Senior; Ana Michelle Trevino, 19, Senior, James Pace High School, Brownsville, Texas, T: Dora Lopez

Corpus Christi, USTX15, Coastal Bend Regional Science Fair

EA004  Pleistocene Rancholabrean Large Mammalian Fauna from Aransas River, San Patricio County, Texas
Lauren Monet Hall, 15, Sophomore, School of Science and Technology, Corpus Christi, Texas, T: Elise Hinojosa

EV301  Fracking Contamination
Roger Christian Garcia, 15, Sophomore; Jolynn Faith Riojas, 16, Sophomore, Taft High School, Taft, Texas, T: Peter Bosquez

Dallas, USTX01, Beal Bank Dallas Regional Science and Engineering Fair

BI001  Organic Foods? Buy or Bypass: A Comparative Study Analyzing the Effects of Pesticides on Nutritional Content, Heavy Metal Toxicity and Pesticide-Induced Diseases
Ria Chhabra, 16, Freshman, Plano Senior High School, Plano, Texas, T: Kim Wolff

CH301  Synthesis of Periodic Mesoporous Organosilicas (PMOs) for Radiotherapeutic and Chemotherapeutic Treatments
#  Jessica Hong, 16, Junior; Alicia Danielle Dsouza, 16, Freshman, Plano Senior High School, Plano, Texas; Plano East Senior High School, Plano, Texas, T: Julie Baker, Kim Wolff

EE001  The Helping Hand
Michael Sabry Saber Farid, 14, Freshman, McMillen High School, Murphy, Texas, T: Judith Rochester

ET002  Dye Sensitized Solar Cells: New Structures and Components for Greater Efficiency
Mokshin Suri, 17, Junior, Plano West Senior High School, Plano, Texas, T: Neil Milburn

EV004  Insect-repelling Plants & New Organic Pesticide
Heeyong Huh, 17, Sophomore, Newman Smith High School, Carrollton, Texas, T: Sheu-Fen Lee

MA001  A Novel Mathematical Simulation to Study the Dynamics of CD4 Cells, CD8 Cells, and HIV Viral Load
#  Nirali Kunjan Thakor, 16, Sophomore, Shepton High School, Plano, Texas, T: Deanna Shea

ME003  The Use of MnSOD in Combined Modality Therapy to Sensitize Lung Cancer Cells to Ionizing Radiation and Chemotherapy
#  Ahneesh Jayant Mohanty, 17, Junior, Plano Senior High School, Plano, Texas, T: Kim Wolff
MI302  Project Runway: Creating an Antibacterial/Antifungal Fabric for Military Personnel and Athletes
Stephanie Vu, 15, Freshman; Avni Nandu, 15, Freshman, Clark High School, Plano, Texas, T: Cathy Bambenek

PS301  Enhanced Third-Generation Biofuel Production from Genetically Modified Algae
Wenjia (Dara) Li, 16, Freshman; Anoop Vemulapalli, 16, Junior, Jasper High School, Plano, Texas; Plano West Senior High School, Plano, Texas, T: Pat Kite

El Paso, USTX02, Sun Country Science Fair

CH001  Enzyme Concentration
Sara Jawad Mahmoud, 17, Junior, Franklin High School, El Paso, Texas, T: Jessica Quinteros

EN003  Trailer Safety
Jacqueline Villalobos, 15, Freshman, Americas High School, El Paso, Texas, T: Liliana Ramirez

EV003  Effect of Temperature on Radon Decay Rate
Bianca Montano, 17, Junior, El Dorado High School, El Paso, Texas, T: Antonio Castruita

Fort Worth, USTX03, Fort Worth Regional Science and Engineering Fair

CH010  Stay Home or Go Global: Local versus Imported Fruit
Liesl Krone, 15, Freshman, Granbury High School, Granbury, Texas, T: Kayli Morris

CS015  Detecting Heart Disease Faster
Jiacheng Jason He, 16, Senior, Texas Academy of Mathematics and Science, Denton, Texas, T: Donna Fleming

EE018  Principles of Electrowetting on Liquid Prism Beam-Steering Module
Christopher Y. Shen, 17, Junior, Texas Academy of Mathematics and Science, Denton, Texas, T: Jiangtao Cheng

EE019  Analyzing the Effectiveness of Applying the Mathematical Fibonacci to Modern Solar Sequence Panel Design
Spencer Ladd Kendall, 17, Junior, Harmony School of Nature, Dallas, Texas, T: Dawn Wakeley

MI010  The Inception of Infection II: The Antimicrobial and Synergistic Efficiency of Antibiotic Ethambutol and Isoniazid and Bacteriophage D29 in Treating a Model Organism for Tuberculosis
Lucy Cai, 17, Junior, Texas Academy of Mathematics and Science, Denton, Texas, T: Donna Fleming

Houston, USTX05, Science Engineering Fair of Houston

BE015  Role of Somatostatin Interneurons in Alzheimer’s Disease
Divya Koyyalagunta, 18, Senior, Clear Lake High School, Houston, Texas, T: Brenda Pinchbeck

BIO20  Cell Cycle Suppression in Breast Ductal Carcinoma by Anti-Cyclin E Antibody
Sachindra Nath Sanam Venkata, 15, Sophomore, Michael E. DeBakey High School for Health Professions, Houston, Texas, T: Barbara Williams

CS031  Train the Artificial Brain II: Computer-Aided Diagnosis and Treatment Plan of Alzheimer’s Disease using Neural Networks
Roma Vivek Pradhan, 17, Senior, Friendswood High School, Friendswood, Texas, T: Rebecca Clark

ET030  Riding the Wave: Energy in Motion
Matthew Caffet, 16, Junior, The Academy of Science and Technology at The Woodlands College Park High School, The Woodlands, Texas, T: Susan McLarin Caffery

EV028  Novel Renewable Filter for Heavy Metal Removal: A Practical Application of Functionalized Multi-Walled Carbon Nanotubes
Perry Alagappan, 17, Junior, Clear Lake High School, Houston, Texas, T: Brenda Pinchbeck

ME033  A Novel Egg Timer Test on the Horizon: Changing Womens’ Lives
Tanya Kumar, 14, Freshman, Clear Brook High School, Friendswood, Texas, T: Alaina Garza

PH029  Trapped Field Superconducting Magnets
Kavita Anjali Selva, 14, Freshman, Clear Lake High School, Houston, Texas, T: Brenda Pinchbeck
PH030  The Optimization of Rocket Nozzle Performance
Jamie Christine McCullough, 17, Senior, Friendswood High School, Friendswood, Texas,
T: Rebecca Clark

PH305  Holes Can Lift: A Continuing Study of the Separation Effects of Airfoil Slots
Sarah Nicole Hancock, 16, Junior; Kate Rutherford, 17, Junior, Clear Horizons Early College
High School, Houston, Texas, T: Sheryl Dalpe
Laredo, USTX07, United Independent School District Regional Science Fair

PH021  Spectrometry Applied
Miguel Angel Dominguez, 17, Junior, John B Alexander High School, Laredo, Texas,
T: Veronica Villereal
Laredo, USTX14, Laredo Independent School District Science Fair

ET301  Optimization of the Aerobic Cultivation of Euglena to Be Used in Environmentally Feasible
Production of Alternative Fuel
Abigail Cadena, 15, Sophomore; Juan Guevara, 16, Sophomore, Joseph W. Nixon, Laredo,
Texas, T: Heather Spudich
Lubbock, USTX08, South Plains Regional Science and Engineering Fair

AS018  The Compositional and Hormonal Difference between Organic and Conventional Meat,
Year II
Sarah Elise Wanjura, 17, Senior, Christ the King Cathedral School, Lubbock, Texas,
T: Alicia Chaloupka

EV007  Investigation of Endocrine Disruptors: The Presence and Effects of Neonicotinoid and
Sulfoximine Pesticides
Nickolas Aubrey Hines, 18, Senior, Christ the King Cathedral School, Lubbock, Texas,
T: Alicia Chaloupka
Odessa, USTX09, Permian Basin Regional Science Fair

EM001  Reclaiming the Desert
Ethan Trotter, 18, Senior, Andrews High School, Andrews, Texas, T: Cindy Tochterman

Kennen Dickens, 16, Junior, Cornerstone Christian School, San Angelo, Texas, T: Scott Sustek
San Antonio, USTX11, Alamo Regional Science and Engineering Fair

CH006  Measuring Antioxidants in Food and Beverages
Daniel Bakos, 16, Sophomore, John Jay High School, San Antonio, Texas, T: Daniel Sweet

CH302  A Characterization of Ultrastable Silver Nanoparticles
Blanca Isabella Hernandez Uribe, 17, Junior; Aysha Kinjo Demeler, 18, Senior, Health Careers
High School, San Antonio, Texas, T: Daniel Bump

EE011  Aircraft Propeller Noise Reduction Using Owl Feather Inspired Notching
David Alexander Ferrill, Jr., 16, Sophomore, John Jay High School, San Antonio, Texas,
T: Jenny Ostos

ET009  A Novel Single Compartment Concentration Cell Powered by Natural Evaporation for
Green Energy Harvesting and Storage, Year Two
Andrew Yang, 17, Senior, Health Careers High School, San Antonio, Texas, T: Daniel Bump

EV006  An Investigation of the Consequences of Aquatic Single-Walled Carbon Nanotube Exposure
Concerning Daphnia magna at Varying Concentrations
Jonathan James McCutchen, 14, Freshman, Keystone School, San Antonio, Texas,
T: Jason Nydegger

ME009  Seeking a Cure II: Targeting ERβ in a Novel Cost-Effective Treatment for
Ovarian Epithelial Cancer
Jocelyn Elizabeth Hernandez, 17, Junior, STEM Academy at Robert E. Lee High School,
San Antonio, Texas, T: Lane M. Smiley

ME010  Natural Remedy for Pancreatic Cancer
Trisha Mulamreddy, 16, Junior, Keystone School, San Antonio, Texas, T: Jason Nydegger
San Antonio, USTX50, ExxonMobil Texas Science and Engineering Fair

EA015  Geographic Belts for Hurricane Landfall Location Prediction
William Wu, 17, Senior, Clear Lake High School, Houston, Texas, T: Ashley Poloha

EE059  Lamp Black Carbon Films: Supercapacitors of the Future
Riddhi Kumar, 17, Junior, Claudia Taylor Ladybird Johnson High School, San Antonio, Texas,
T: Leslie Salazar

EN038  Evaluating Feasibility of Using Microbial Fuel Cells as Power Supply for Implantable
Medical Devices
Isuru Ashan Somawardana, 15, Freshman, Keystone School, San Antonio, Texas,
T: Jason Nydegger
ET044  The Cooling of Solar Panels to Increase Power Output
Christopher Rafael Botello, 15, Sophomore, John Jay High School, San Antonio, Texas, T: Jenny Ostos

MA032  A Monte Carlo Protein Folding Simulation using Energy Optimization with Novel Applications to Alzheimer's Disease Research
# Niranjan Balachandar, 17, Junior, Texas Academy of Mathematics and Science, Denton, Texas, T: Donna Fleming

MI038  Inhibition of Host-Cell Endosomal Acidification by H1N1 Influenza
Alex White, 17, Junior, Uplift North Hills Preparatory, Irving, Texas, T: Bojana Trninic-Radja

MI039  What's on the Menu?: Identification of the Hydrocarbon Transport Systems as a First Step in Marine Oil-Degradation by Alcanivorax Borkumensis
Swapnav Deka, 16, Junior, Plano East Senior High School, Plano, Texas, T: Julie Baker

PS026  The Effect of Nitrogen-Rich Fertilizers on the Growth and Yield of Cotton Plants
Lindsay M. Northcut, 18, Senior, Christ the King Cathedral School, Lubbock, Texas, T: Alicea Chaloupka

UTAH
Cedar City, USUTO2, Utah Science and Engineering Fair

EE040  Mobile Inverted Pendulum Testing Platform
## Taylor Boardman, 17, Junior, Delta High School, Delta, Utah, T: Austin Day

PS048  Cryopreservation and Germination of Pisum sativum
Brooklyn Shae Morris, 17, Junior, SUCCESS Academy Dixie, St. George, Utah, T: Charmain W. Brammer

EN039  Mud Energy: Single Chamber Sediment Microbial Fuel Cells
Curtis Von Thygerson, 17, Junior, SUCCESS Academy Dixie, Saint George, Utah, T: Charmain W Brammer

UTAH
Logan, USUTO6, Bridgerland Science and Engineering Fair

MI025  Resveratrol Biosynthesis in Genetically Engineered Microorganisms
Steven Ban, 17, Senior, Logan High School, Logan, Utah, T: Jixun Zhan

PS020  The Effect of Nutrient Solution Concentration on Hydroponic Spinach Plants
Boston Victoria Swan, 17, Senior, InTech Collegiate High School, North Logan, Utah, T: Stephanie Kawamura
**Ogden, USUT03, Weber Area Science and Engineering Fair**

**BE025**  
**An Analysis of Self-Perception in Relation to the Decision to Intervene in Bullying Situations within the Educational System**  
##  
Tessa Ray Carver, 18, Senior, Weber High School, Pleasant View, Utah, T: Lareen Radle

**CH029**  
**King’s Electrolyte Drink vs. Pedialyte, Phase II**  
Ryan Ball, 17, Junior, Weber High School, Pleasant View, Utah, T: Lareen Radle

**ET045**  
**Optimizing the Utilization of Wind Energy with an Alternative Engineering Design: A Horizontal Dual Motor Turbine, Phase II**  
#  
Caid Lunt, 17, Junior, Weber High School, Pleasant View, Utah, T: Lareen Radle

**MA033**  
**Me, Mean, or Median: Which Is More Accurate at Determining Solutions to Questions that Can Only Be Quantified Empirically?**  
Megan Harris, 15, Freshman, Weber High School, Pleasant View, Utah, T: Carolyn Robertson

**MI041**  
**Is Methicillin-Resistant *Staphylococcus aureus* (MRSA) Present Influent Wastewater?**  
Emma Marie Duffin, 14, Freshman, Roy High School, Roy, Utah, T: Maggie Huddleston

**PH047**  
**Impact of Running Surfaces**  
Tyler Michael Staten, 15, Freshman, Bonneville High School, Ogden, Utah, T: Sara Yearsley

**Ogden, USUT07, Harold W. & Helen M. Ritcey Science and Engineering Fair of Utah**

**BE027**  
**The Effects of Imagined Stressful Trauma on Optimism and Self-Esteem in Adolescents**  
Karissa Wang, 15, Sophomore, Northern Utah Academy for Math Engineering and Science, Layton, Utah, T: Karl Medinger

**EE321**  
**FitVos: A Cost-effective, Open Source UAV Designed for Easy Construction**  
Logan Eastman, 16, Sophomore; Drex Bradshaw Beckman, 16, Sophomore, Northern Utah Academy for Math Engineering and Science, Layton, Utah, T: Karl Medinger

**EV037**  
**Percolation vs. Homogenization: The Effects of Phosphate Amendment on Lead Contaminated Soil, Phase II**  
#  
Annika Daniels, 15, Sophomore, Ogden High School, Ogden, Utah, T: Lori Daniels

**ME058**  
**Aqueous Extracts of *Cinnamomum spp.*, *Syzygium romaticum* and Cinnamaldehyde and Their Effects on the Growth of MDA-MB-231**  
#  
Emma Fine, 16, Sophomore, DaVinci Academy of the Science and the Arts, Ogden, Utah, T: Deb Neal

**Provo, USUT04, Central Utah Science and Engineering Fair**

**BI047**  
**Titanium (IV) Oxide and Its Subsequent Effects on Cultured Cells**  
Elizabeth Sarah Finlayson, 16, Junior, Lone Peak High School, Highland, Utah, T: Heather Riet

**CB047**  
**Effects of Resveratrol on 5-Fluorouracil Chemotherapeutic DNA Damage and Drug Resistance in Breast and Prostate Cancer Cells**  
#  
Michael Xiao, 16, Sophomore, Lone Peak High School, Highland, Utah, T: Mark Berrett

**EE328**  
**Building a Better Battery: A Prototypical Analysis Utilizing Carbon-Based Ultra-Capacitor Technology**  
Taylor Murdock, 17, Senior; Kenyon Conlin, 17, Junior, Wasatch High School, Heber City, Utah, T: Kimberly Conlin

**ET051**  
**Developing an Organic Voltaic Cell**  
Kaden Springer, 17, Senior, American Fork High School, American Fork, Utah, T: Michelle Ormond

**PH312**  
**Nuclear Fusion Using a Pyroelectric Crystal Particle Accelerator**  
Tucker John Sandbakken, 17, Junior; Jason Kim Syndergaard, 17, Junior, Maple Mountain High School, Spanish Fork, Utah, T: Allen Wallace

**PS316**  
**Investigating the Origin of Descent for the North American Variation of *Picea abies* Using the Mitochondrial nad1 Gene Intron**  
Micah Cardwell Clegg, 16, Junior; Samuel Ray Himes, 17, Junior; Ethan Peterson, 17, Junior, Pleasant Grove High School, Pleasant Grove, Utah, T: Samuel Ray Himes, David Van Dijk

**Salt Lake City, USUT05, Salt Lake Valley Science and Engineering Fair**

**BE026**  
**Neighborhood Built Environment and Leisure-Time Physical Activity Participation Among Adults in Utah**  
Calvin Haowen Yu, 16, Junior, Hillcrest High School, Midvale, Utah, T: Jami Smith

**EE056**  
**Demonstration and Characterization of Split Ring Resonators as Terahertz Waveguides**  
#  
Brandon Cui, 16, Junior, Hillcrest High School, Midvale, Utah, T: Jami Smith

**EE320**  
**Ice Bot: A Deep Sea Diving Apparatus**  
#  
Mirae Leigh Parker, 18, Senior; Ema Linnea Parker, 15, Sophomore, West High School, Salt Lake City, Utah; Wasatch Academy, Mount Pleasant, Utah, T: Hilary Thirlwell
EN318 Guns, Flames, and Steel 2.0: Creation of a Non-Newtonian Fluid-Based Body Armor
Madison Diane Reed, 16, Junior; Elizabeth Marie Prucka, 15, Freshman, Park City High School, Park City, Utah, T: Janice Jones

ET309 Powering Hydrogen Fuel Cells Using Chemical Water Splitting
Timothy Shiao Yong Quah, 17, Junior; Vineeth Ashok Bajji, 16, Junior, West High School, Salt Lake City, Utah, T: Enrique Arce-Larreta

EV038 Investigation of Different Degradation Treatments on Pesticide Contaminated Water with Toxicity Bioassay on Daphnia magna
# Bovey Rao, 17, Junior, Hillcrest High School, Midvale, Utah, T: Jami Smith

VERMONT
Northfield, USVT50, Vermont State Science and Mathematics Fair
CS071 Potential for Learning and Memory in Evolutionary Robotics
Gailin Pease, 17, Senior, Burlington High School, Burlington, Vermont, T: Mark Wagy

EM042 Bioremediation: Using Strains of Pseudomonas on Oil Spills
Nevil Desai, 15, Sophomore, South Burlington High School, South Burlington, Vermont, T: Curtis Belton

MI047 Lactobacillus vs. Amoxicillin: Beneficial Bacteria as a Treatment for Sinus Infections
# Bovey Rao, 17, Junior, Hillcrest High School, Midvale, Utah, T: Jami Smith

VIRGINIA
Arlington, USVA01, Northern Virginia Science and Engineering Fair
AS022 The Ipomoea batatas Leaf: Isolation and Identification of Its Mosquito Larvicidal Agent
# Margaret Donovan Doyle, 17, Junior, Yorktown High School, Arlington, Virginia, T: Paul Hessler

Ashburn, USVA07, Loudoun County Science and Engineering Fair
BI018 Diet-based Inhibition of Acetylcholinesterase as a Treatment for Myasthenia Gravis and Alzheimer’s Disease
Elishama Michel, 18, Senior, Loudoun County Academy of Science, Sterling, Virginia, T: Julie Sohl

CS026 Automated American Sign Language Translation: Identifying the Handshape Component of American Sign Language Using a 3D-camera and Handtracking Middleware Library to Create a Basis for an Automated Sign Translator
Hannah Margaret Devinney, 18, Senior, Loudoun County Academy of Science, Sterling, Virginia, T: Sundar Thirukkurungudi

MA017 Developing a Unique Model to Predict the Efficacy of a Revolutionary Cancer Therapy
# Rachel Burns, 18, Senior, Loudoun County Academy of Science, Sterling, Virginia, T: Diana Virgo

ME030 A Natural Way to Improve Chemotherapy: Investigating the Effect of Biochanin A on the Efficacy of Thapsigargin in a C. elegans Cancer Model
Audrey Lyn Francis, 17, Senior, Loudoun County Academy of Science, Sterling, Virginia, T: Julie Sohl

Charlottesville, USVA02, Virginia Piedmont Regional Science Fair
CB019 The Effect of a New LncRNA 2953 on Muscle Creation
Caitlin Dutta, 16, Junior, Western Albemarle High School, Crozet, Virginia, T: Carol Stutzman

CS032 iClick: The Development of a Vision-Based Virtual Mouse
Selena Chun Feng, 15, Sophomore, Albemarle High School, Charlottesville, Virginia, T: Kirsten Fuoti

Fairfax, USVA03, Fairfax County Regional Science and Engineering Fair
AS020 Effect of Turmeric on Memory Curves of Planarians: An Investigation into Chemical Memory
# Supraja Chittari, 17, Senior, George C. Marshall High School, Falls Church, Virginia, T: Nimel Theodore

CH019 Optimal Chlorine/Ammonia Chloramine Equilibrium Ratios to Prevent Lead Leaching
Matthew Duy Nguyen, 17, Junior, Fairfax High School, Fairfax, Virginia, T: Neda Doneva

CS033 A Novel Computational Agent-Based Model for the Outbreak, Spread, and Containment of Tuberculosis
Parth Chopra, 17, Senior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Shane Torbert

EE034 Pneumatic Electromyographic Exoskeleton
# Conor James Maddry, 17, Junior, Langley High School, McLean, Virginia, T: Robert Foley
MA021  On the Unique Roles of Neurocomputational States in Neocortical Circuits
#  Archis Bhandarkar, 18, Senior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Barbara Wood

ME034  Novel Single-Cell Screening: Optimized Droplet-Based Microfluidics for High-Throughput Screening of Adherent Cells
###  Jason Shao Cui, 18, Senior, Langley High School, McLean, Virginia, T: Jeromy Gilman

ME304  Next-Generation Cancer Therapeutics: Enhancing Anti-Tumor Specificity of Antibody Drug Conjugates by N297Q Deglycosylation
  Shi Yuan (Elly) Meng, 17, Junior; Shi Chan (Amy) Meng, 17, Junior, Wilbert Tucker Woodson High School, Fairfax, Virginia, T: Ellen McLean Babcock

MI307  The Effect of Tattoo Ink Pigments on the Reverse Mutation Rate in E. coli Strain 49979
  Cara Golias, 16, Sophomore; Trisha Deshmukh, 15, Sophomore, Fairfax High School, Fairfax, Virginia, T: Michelle Gilligan

PH032  Kinematic Determinants of Success in the Fencing Flick: Logistic and Linear Multiple Regression Analysis
  Anya Noelle Michaelsen, 16, Junior, Lake Braddock Secondary School, Burke, Virginia, T: Robert Irelan

PH040  Varying International Space Station Re-entry Angle to Minimize Debris
  Nicholas Ross Poniatsowski, 16, Sophomore, Hayfield Secondary School, Alexandria, Virginia, T: Sara Hubbart

Harrisonburg, USVA04, Shenandoah Valley Regional Science Fair

CS058  HyperCalc: A Free Multi-Platform Conversion and Calculation Application
  Logan Alexander Apple, 14, Freshman, Millbrook High School, Winchester, Virginia, T: Saharsha Nambari

EV032  Exploring the Effect of Herbicides on Aquatic Ecosystems: The Denitrification Efficacy of Lemna minor under Varying Atrazine Concentrations
  Abigail Ella Johnson, 17, Junior, Shenandoah Valley Governor’s School, Fishersville, Virginia, T: Alf Zhu

Lexington, USVA50, Virginia State Science and Engineering Fair

CB056  Reprogramming Hair Follicle Stem Cells into Cardiomyocytes
#  Manotri Chaubal, 17, Senior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Andrea Cobb

EM044  The Removal of Copper (II) Sulfate Water using Saccharomyces cerevisiae through Bioremediation
  Julia Shae Hager, 18, Senior, Pulaski County High School, Dublin, Virginia, T: Krista Stith

MI066  Approaching Anti-Viral Therapeutics via Sequence Analysis of Nucleoprotein and Glycoprotein Precursor Genes of Lassa Virus
  Matthew Dae-Young Park, 16, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Tomasz A. Leski

Lynchburg, USVA05, Central Virginia Regional Science Fair

AS010  The Effect of Exogenous Melatonin on the Diurnal Phototactic Behavior of Daphnia magna
  Mikayla Noel Carlton, 17, Junior, Central Virginia Governor’s School/Brookville High School, Lynchburg, Virginia, T: Shannon Beasley

PH050  An Analysis of the Feasibility of a Superconducting Maglev Launch System Based on the Meissner Effect
  Chan Sam Lee, 17, Junior, Central Virginia Governor’s School/Brookville High School, Lynchburg, Virginia, T: Stephen Smith

Manassas, USVA06, Prince William-Manassas Regional Science Fair

CH313  The Synthesis and Oil Absorption Properties of Hydrophobic Silica-Based Aerogels by Varying Methods of Functionalization
  Caroline Gellene, 17, Senior; Ashleigh Grace Wright, 18, Senior, The Governor’s School, Manassas, Virginia, T: Bruce Averill

Norfolk, USVA09, Tidewater Science and Engineering Fair

BIO17  The Effects of Active Site Mutation in Anopheles gambiae Tran glutaminase 3 (AgTG3)
  Minh-Quan D. Pham, 18, Senior, Ocean Lakes High School, Virginia Beach, Virginia, T: Heather C Green

MA016  A New Statistical Measure of Effect Size: Rate-Adjusted Standardized Mean Difference (RASMD)
#  Katherine Marie Webb, 17, Senior, Tabb High School, Yorktown, Virginia, T: Karen Mayeaux
Radford, USVA10, Blue Ridge Highlands Regional Science Fair

CH304 Crystal Formation on Collagenous Gels: Effects of Carboxylation and pH on Rates and Polymorphs of Calcium Carbonates
Meredith Ellen Dove, 17, Junior; Keena K. Shang, 17, Junior, Blacksburg High School, Blacksburg, Virginia, T: Nizhou Han

ET303 Designing, Prototyping, and Testing Agricultural Drones
* Jordan Taylor Kuhn, 17, Senior; Eric Gene Chang, 16, Junior, Christiansburg High School, Christiansburg, Virginia, T: Sherry U. Pugh

Richmond, USVA11, Metro Richmond STEM Fair

AS040 L-Leucine: A Novel Facilitator of Adult Stem Cell Differentiation in Dugesia tigrina
David Lu, 16, Sophomore, Mills E. Godwin High School, Richmond, Virginia, T: Denise Williams

BE013 The Paradox of Emotional Dimensionality: The Effect of the Dimensionality of Audio Stimuli on the Brain's Electrical Activity, a Neuroscience Study
Michelle Marie Marquez, 14, Freshman, Math and Science High School at Clover Hill, Midlothian, Virginia, T: Dana Johnson

Roanoke, USVA08, Western Virginia Regional Science Fair

ET027 Comparing Shroud Design on the Electrical Power Output of a Small-Scale Horizontal-Axis Wind Turbine
Kelly Nicole Devens, 15, Sophomore, Roanoke Valley Governor's School for Science and Technology, Roanoke, Virginia, T: Brent Holt

WASHINGTON
Bellevue, USWA03, Central Sound Regional Science & Engineering Fair

CS018 Analyzing and Preventing Quick Response Code-based Malware and Phishing Attacks for Smartphones
* Alisha Saxena, 17, Senior, Interlake High School, Bellevue, Washington, T: Tadayoshi Kohno

EV024 Investigating the Sublethal Effects of Polycyclic Aromatic Hydrocarbons (PAHs) on Salmon Using Zebrafish as a Model Organism
** Meera Radha Srinivasan, 16, Junior, Interlake High School, Bellevue, Washington, T: Tia Thiel

Bremerton, USWA50, Washington State Science and Engineering Fair

CH056 Graphene Oxide and Reduced Graphene Oxide Coated Nafion Membranes for Enhanced Performance in Hydrogen Fuel Cells
Cameron Akker, 17, Senior, School: Redmond High School, Redmond, T: Cheng Pan

EM052 Removing Carbon Dioxide from our Atmosphere: Using Porous Crystalline Materials for CO₂ Capture
Naveen Aishwarya Bontha, 14, Freshman, Hanford High School, Richland, Washington, T: Cathy Stordeur

ET059 Biodiesel Production by Transesterification Using Environmentally Benign Reusable Heterogeneous Catalyst
Dyuti Shreya Nandy, 15, Freshman, Newport High School, Bellevue, Washington, T: Jeremy Brown

Kennewick, USWA01, Mid-Columbia Regional Science and Engineering Fair

ET026 Next Generation Supercapacitor for Ultra-Fast Energy Harvesting
* Swetha Vanathy Shutthanandan, 16, Sophomore, Richland High School, Richland, Washington, T: Brent Potter

PH026 The Generation and Analysis of Waves with Varying Nonlinearity
** Thorsen Michael Wehr, 17, Junior, Odessa High School, Odessa, Washington, T: Jeffery Wehr
Tacoma, USWA02, South Sound Regional Science and Engineering Fair

AS050 Strengthening _Daphnia magna’s_ Resistance to Poisoning Caused by Copper (II) Sulfate Pentahydrate using Non-Invasive Methodology
Elise Isabella Wilson, 18, Senior, Sumner High School, Sumner, Washington, T: Ralph Morasch

EE057 IoT (Internet of Things) Connected Air Quality Monitor to Detect and Measure Particulate Matter Concentration
Anjali Vasisht, 14, Freshman, Olympia High School, Olympia, Washington, T: Jesse Stevick

ME061 Evolution of Developing an Alternative Treatment for _Candida albicans_ Using Natural Plant Extracts
Surabhi Gopal Mundada, 14, Freshman, Olympia High School, Olympia, Washington, T: Edward Bassett

Vancouver, USWA04, Southwest Washington Science and Engineering Fair

CB010 Universal, HLA-E Restricted Killer T cell Responses: Identification of a Novel Immune Response against HIV
Reesab Pathak, 15, Junior, Camas High School, Camas, Washington, T: Ronald Wright

CB016 Does BPA Cause Hearing Loss? Assessing the Potential Ototoxicity Induced by Bisphenol-A in _Danio rerio_ (Zebrafish) Lateral Line
Megal Sheth, 16, Junior, Camas High School, Camas, Washington, T: Kimberly Newman

WEST VIRGINIA

Fairmont, USWV50, West Virginia State Science and Engineering Fair

ME062 AKT and pAKT Expression in Different Insulin Sensitive Tissues from C57BL/6J Mice
Nanda Krishnan Siva, 17, Senior, Parkersburg High School, Parkersburg, West Virginia, T: Lisa Berry

Keyser, USWV01, West Virginia Eastern Panhandle Regional High School Science Fair

BE306 Why the Things We Love Are Hurting Us: An Analysis of the Amount of Screen Time on Dopamine
Hana Kim Ulman, 17, Junior; Hannah Marie Coffey, 16, Junior; Brandon Michael Hill, 16, Junior, Hedgesville High School, Hedgesville, West Virginia, T: Andrew Ferber

ET020 Möbius Strip Wind Turbine Ring
Yagna Sai Deep Vudathu, 15, Sophomore, Spring Mills High School, Martinsburg, West Virginia, T: Karen Williams

West Liberty, USWV03, West Liberty State University Regional Science and Engineering Fair

EM045 Safe and Sound Housing: Safe and Environmentally Sound Lime/Fly Ash Papercrete as a Substitute for Adobe in Seismically-Active Regions in Developing Nations
Miriam Terese Demasi, 15, Freshman, Wheeling Park High School, Wheeling, West Virginia

WISCONSIN

Glendale, USWI02, Nicolet Science and Engineering Fair

MA009 Characterization of the Line Complexity of Cellular Automata Generated by Polynomial Transition Rules
Bertrand Andrew Stone, 16, Senior, Nicolet High School, Glendale, Wisconsin, T: Eliot Scheuer

ME111 Protecting DNA Structure and Function: Effectiveness of Common UV Radiation Barriers
Kara E. Conley, 15, Freshman, Nicolet High School, Glendale, Wisconsin, T: Stephanie Deering

PH074 Probing the Viability of Methicillin-resistant _Staphylococcus aureus_ upon Irradiation with Blue Laser Light
Grant Alfred Hussey, 17, Senior, Nicolet High School, Glendale, Wisconsin, T: Stephanie Deering

Madison, USWI04, Capital Science and Engineering Fair

BI012 A Drug Discovery Project: Allosteric Inhibition of Indolethylamine N-Methyl Transferase
Sevahn Kayaneh Vorperian, 17, Senior, West High School, Madison, Wisconsin, T: Arnold Ruoho

Milwaukee, USWI03, University School of Milwaukee - Science Fair

ET004 A Study of the Effects of Incomplete Spiroids on the Drag Coefficient of an Airfoil
Robert Joseph Hermanoff, 15, Sophomore, University School of Milwaukee, Milwaukee, Wisconsin, T: Bob Heun

ME006 Characterizing Axillary Lymph Nodes
Jack Collison, 16, Sophomore, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
ME007  Combinations of Immune Checkpoint Blockade Inhibitors and Lymphodepletion as Immunotherapy for Myeloma

###
Dominique Helen Tlomak, 17, Senior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch

Milwaukee, USWI50, Badger State Science and Engineering Fair

ME046  Induced Pluripotent Stem Cell-Derived Cardiomyocytes as a Model for Ischemia Reperfusion Injury

Karina Noel Schmidt, 17, Junior, Divine Savior Holy Angels High School, Milwaukee, Wisconsin, T: Betty Jo Azpell

PH048  Optimizing the Accuracy and Precision of Asteroid Orbital Determination: A Novel Approach

Amara McCune, 17, Senior, Stoughton High School, Stoughton, Wisconsin, T: Cindy Carter

Sheboygan, USW101, Lakeland Science and Engineering Fair

CS019  Panthera: A Study of Caching in Distributed Systems

###
Dhaivat Nitin Pandya, 16, Junior, Appleton North High School, Appleton, Wisconsin, T: Nitin Pandya

WYOMING

Greybull, USWY01, Northern Wyoming District Science Fair

CB003  Evaluating the Effectiveness of Anthocyanin Treatment on the Reduction of CD4 Activity Associated with Cell Membrane Transformation of Viral DNA

Emma Nelson, 17, Junior, Greybull High School, Greybull, Wyoming, T: Joel Kuper

EV001  Nanofiber Cellulose Zero Valent Iron Filtration: Potential for Reduction of Water-Borne Particulate and Microbial Contaminants

Ceirra Danielle Carlson, 18, Senior, Greybull High School, Greybull, Wyoming, T: Joel Kuper

Laramie, USWY50, Wyoming State Science Fair

CB006  Berberine Compounds as a Potential Methodology for Controlling Activity of Select Membrane Proteins

Jarelly Stephanie Castro, 18, Senior, Greybull High School, Greybull, Wyoming, T: Joel Kuper

EM010  Efficient Watering

Connor A. Coughenour, 16, Sophomore, Natrona County High School, Casper, Wyoming, T: Brock Burch

EN035  Towards Practicality

Katrina Haines, 17, Junior, Southeast Goshen County High School, Yoder, Wyoming, T: Lonna Schmick

ET064  Renewable Sources of Energy: A Study of Low-Cost By-Products, Cattle Manure and Nitrogen for Methane Gas Conversion Production

Mike Espy, 16, Junior, Little Snake River Valley, Baggs, Wyoming, T: Dan Cheatham

MA013  Weighted Catalan Numbers and Their Divisibility Properties

Sarah Lee Shader, 17, Senior, Laramie High School, Laramie, Wyoming, T: Erin Klauk

PH020  Time and Radiation Domain in Star-Like Objects: Relating Intrinsic Colors of Quasars to Redshifts


UNITED STATES VIRGIN ISLANDS

St. Croix, TEVI02, Good Hope Country Day School Science Fair

AS055  State of the Invasion

Duncan Bruce Coles, 17, Junior, Good Hope Country Day School, Kingshill, United States Virgin Islands, T: Jane Coles

MI069  Moringa Power: Old or New?

Aliyah Alexa Allick, 14, Sophomore, Good Hope Country Day School, Kingshill, United States Virgin Islands, T: Laurie Dunton

URUGUAY

Paysandu, URY001, Feria Nacional de Clubes de Ciencia

BE308  The Accomplice Silence: The Role of Spectators in Bullying

Mauro Páez, 18, Senior; Andrea Aldaz, 18, Freshman; Andrea De Leon, 18, Freshman, Schools: Escuela Tecnica Rafael Peraza, Rafael Peraza, Uruguay, T: Sandra Ximenez
EM309  Smart Compost: A Proposal of Biotechnological Application  
Enzo Quintana Batto, 18, Senior; Juan Parentelli, 18, Senior; Camila Muniz, 18, Senior; Schools: Liceo 2 Carmelo, Carmelo, Uruguay, T: Marbis Neme

EV305  Efficiency of Three Macrophytes in the Remediation of Miguelete Stream Waters  
Melissa Belén Cristóbal, 15, Freshman; Claudia Fabian Lacuesta, 16, Junior; Schools: Liceo No. 17, Montevideo, Uruguay, T: Patricia Soledad Piriz

VIET NAM  
Ha Noi City, VNM001, Ha Noi Science Fair 2012

CH314  From Factories Waste to Fertilizer: Producing Ammonium Sulfate from Gypsum and Fluorosilicic Acid  
Phuong Linh Tran Nguyen, 17, Senior; Dat Thanh Nguyen, 15, Sophomore; Tung Thanh Nguyen, 15, Sophomore, Schools: Xuan Hoa High School, Vinh Phuc, Viet Nam, T: Quang Van Nguyen

CS321  Programming Independence Evolution  
Nghi Lam Dinh, 17, Senior; Minh Cuong Vu Pham, 15, Sophomore, Schools: High School for Gifted Students, Hanoi University of Science, Vietnam National University, Hanoi, Viet Nam, T: Phuong Dac Ho

EE334  Electronic Braille Display for the Visually Impaired  
Dieu Lien Thi Tran, 17, Junior; Du Nam Nguyen, 17, Senior, Schools: Le Hong Phong High School for the Gifted, Ho Chi Minh, Viet Nam, T: Anh Triet Quoc Do

EN327  Lipid Production by Oleaginous Fungi Grown on Rice Straw for Potential Biodiesel Resource  
Lan Yen Dang, 17, Senior; Dat Tien Tran, 17, Senior; Tu Anh Dang, 17, Senior, Schools: Hanoi Amsterdam High School for the gifted, Hanoi, Viet Nam; Hanoi Amsterdam High School for the Gifted, Ha Noi, Viet Nam, T: Huong Thi Thu Tran

EV315  Dispose Waste Lubricant in Soil and Fresh Water by Strains of Microorganisms Isolated in Nature  
Uyen To Tran, 16, Junior; Anh Mai Nhu, 16, Junior; Hong Minh Huynh Duong, 17, Junior, Schools: Tran Dai Nghia High School for the Gifted, Ho Chi Minh, Viet Nam, T: Thuy Duyen Thi Ly

MI316  An Efficient Method to Extract Antimicrobial Saponins from Agave americana and their Application for Fruit Preservation  
Quang Minh Nguyen, 16, Junior; Minh Duc Vu, 16, Junior; Anh Van Tran, 17, Junior, Schools: High School for Gifted Students - Hanoi University of Science, Hanoi, Viet Nam; High School for Gifted Students, Hanoi University of Science, Vietnam National University, Ha Noi, Viet Nam; HUS High School for Gifted Students, Ha Noi, Viet Nam, T: Ha Hoang Van
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