

The Future is Bright



Intel International Science and Engineering Fair 2014 Program

May 11–16, 2014
Los Angeles, California





Intel International Science and Engineering Fair

About the Intel ISEF

The Intel International Science and Engineering Fair (Intel ISEF), a program of Society for Science & the Public, is the world's largest international pre-college science competition. The Intel ISEF is the premier science competition in the world and provides a forum for more than 1,700 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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Intel Corporation
Justin Rattner
President, Intel Foundation

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,

A handwritten signature in dark ink, appearing to read 'Justin Rattner'.

Justin Rattner
President, Intel Foundation

Society for Science & the Public

H. Robert Horvitz

Chairman of the Board, SSP

Professor of Biology

Massachusetts Institute of Technology

Investigator, Howard Hughes

Medical Institute

Nobel Prize in Physiology

or Medicine, 2002



Welcome from Society for Science & the Public

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,

A handwritten signature in cursive script, reading "H. Robert Horvitz".

H. Robert Horvitz
Chair, SSP Board of Trustees



State of California

Barbara Boxer

U.S. Senate

BARBARA BOXER
CALIFORNIA

United States Senate

HART SENATE OFFICE BUILDING
SUITE 112
WASHINGTON, DC 20510-0505
(202) 224-3553
<http://boxer.senate.gov>

COMMITTEES:
COMMERCE, SCIENCE,
AND TRANSPORTATION
ENVIRONMENT
AND PUBLIC WORKS
FOREIGN RELATIONS

May 11, 2014

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

70 WASHINGTON STREET
SUITE 203
OAKLAND, CA 94607
(510) 286-8537

312 NORTH SPRING STREET
SUITE 1748
LOS ANGELES, CA 90012
(213) 894-5000

501 T STREET
SUITE 7-600
SACRAMENTO, CA 95814
(916) 448-2787

2500 TULARE STREET
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600 B STREET
SUITE 2240
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(619) 239-3884

3403 10th STREET
SUITE 704
RIVERSIDE, CA 92501
(951) 684-4849

State of California
Dianne Feinstein
U.S. Senate



Welcome from the U.S. Senate

DIANNE FEINSTEIN
CALIFORNIA

United States Senate
WASHINGTON, DC 20510-0504
<http://feinstein.senate.gov>

SELECT COMMITTEE ON
INTELLIGENCE—CHAIRMAN
COMMITTEE ON APPROPRIATIONS
COMMITTEE ON THE JUDICIARY
COMMITTEE ON RULES AND
ADMINISTRATION

May 11, 2014

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

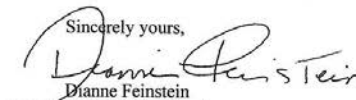
Dear Friends:

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

FRESNO OFFICE:
2500 TULARE STREET
SUITE 4250
FRESNO, CA 93721
(559) 485-7430

LOS ANGELES OFFICE:
11111 SANTA MONICA BOULEVARD
SUITE 915
LOS ANGELES, CA 90025
(310) 914-7300

SAN DIEGO OFFICE:
880 FRONT STREET
SUITE 2050
SAN DIEGO, CA 92101
(619) 231-0712

SAN FRANCISCO OFFICE:
ONE FORT STREET
SUITE 2450
SAN FRANCISCO, CA 94104
(415) 393-0707



City of Los Angeles

Eric Garcetti

Mayor



ERIC GARCETTI
MAYOR

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,

A handwritten signature in dark ink, appearing to read "E. Garcetti".

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.

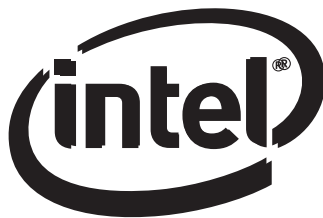
Los Angeles' glamour can only be matched by its culture. L.A. has 105 museums and 225 theaters, including The Music Center, Walt Disney Concert Hall, the Natural History Museum, LACMA, MOCA, the Getty Center, California Science Center, and many others.

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.



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



Gordon Moore
Chairman Emeritus of the Board, Intel Corporation

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

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

Intel Foundation is proud to present the 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

Hotels	Address	Phone
Hilton Checkers	535 S. Grand Avenue	(213) 624-0000
Hotel Figueroa	939 S. Figueroa Street	(213) 627-8971
JW Marriott Los Angeles LA LIVE	900 W. Olympic Boulevard	(213) 765-8600
LA Hotel Downtown	333 S. Figueroa Street	(213) 617-1133
Los Angeles Athletic Club	431 W. 7th Street	(213) 625-2211
Luxe City Center Hotel	1020 S. Figueroa Street	(213) 748-1291
Millennium Biltmore	506 S. Grand Avenue	(213) 624-1011
Omni Los Angeles Hotel	251 S. Olive Street	(800) 843-6664
Ritz Milner Hotel	813 S. Flower Street	(213) 627-6981
Sheraton Los Angeles Downtown	711 S. Hope Street	(213) 488-3500
The Standard Downtown LA	550 S. Flower Street	(213) 892-8080
Westin Bonaventure	404 S. Figueroa Street	(213) 624-1000

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.

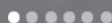
By entering the Intel International Science and Engineering Fair 2014 (Intel ISEF), you agree that you may be filmed or photographed for use in various promotional materials.

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



World's coolest clock

New timepiece, based on cesium atoms, is the world's most precise



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:

Monday, May 12 2:00 p.m.–6:00 p.m.

Tuesday, May 13 9:00 a.m.–5:00 p.m.

Free refreshments served 9:00 a.m.–11:00 a.m.

Thursday, May 15 8:00 a.m.–5:00 p.m.



All Intel ISEF 2014 events take place at the Los Angeles Convention Center (LACC) unless otherwise noted.

Event/Group	Location	Day
Advisory Council Meeting	408 A	5/11 & 5/15
AP Testing	402 A, 403 A/B	5/12–5/16
Excellence in Science & Technology Panel (Sponsored by Intel Corporation)	Halls G/H	5/13
Finalists Project Exhibits	Halls J/K	5/11–5/16
Finalist Resource Center	406 A/B	5/11–5/13
Grand Awards Ceremony	Halls G/H	5/16
Housing Information	South Hall Lobby	5/10–5/15
HUB (Center of Exhibit Hall)	Halls J/K	5/11–5/16
IB Testing	402 B	5/12–5/16
Information Desk	South Hall Lobby	5/10–5/16
The Intel Quad	South Hall Lobby	5/11–5/15
Intel ISEF Expo 2014	Concourse Hall	5/12–13, 5/15
International/Volunteer Office	306 A/B	5/9–5/16
Locator Card Kiosk	South Hall Lobby	5/10–5/12
Lost and Found	HUB	5/11–5/16
Registration Complex	South Hall Lobby	5/10–5/16
Medals and Certificates	South Hall Lobby	5/10–5/16
Official Party Registration	South Hall Lobby	5/10–5/16
Registration Complex		
Opening Dinner	West Hall B	5/12
Opening Ceremony	South Hall G/H	5/12
Press Room	303 A/B	5/11–5/16
Public Visitation	Halls J/K	5/15
Retail Store	Halls J/K Concourse	5/10–5/16
Scientific Review Committee (SRC)	404 A/B	5/11–5/12
Society for Science & the Public Information Booth		
Special Award Ceremony	Halls G/H	5/15
Student Pin Exchange (Open to Finalists and Student Observers Only)	J. W. Marriott Hotel	5/11
Symposia	408–411	5/12–5/15
Tour Desk	South Hall Lobby	5/10–5/16
Volunteer Office	306 A/B	5/9–5/16

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 Infractions only
 9:30 a.m.–11:30 a.m.~Finalists only for Press/PR purposes
 Wednesday 7:45 a.m.–11:45 a.m.,
 1:15 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

406 AB

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

Intel Quad

South Hall Lobby

Sunday 3:00 p.m.–10:00 p.m.
 Monday–Thursday 8:00 a.m.–6:00 p.m.

Intel ISEF Expo 2014 Booths

Concourse Hall

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

306 AB

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

South Hall Lobby

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

South Hall Lobby

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

Retail Store

Concourse outside of Halls J/K

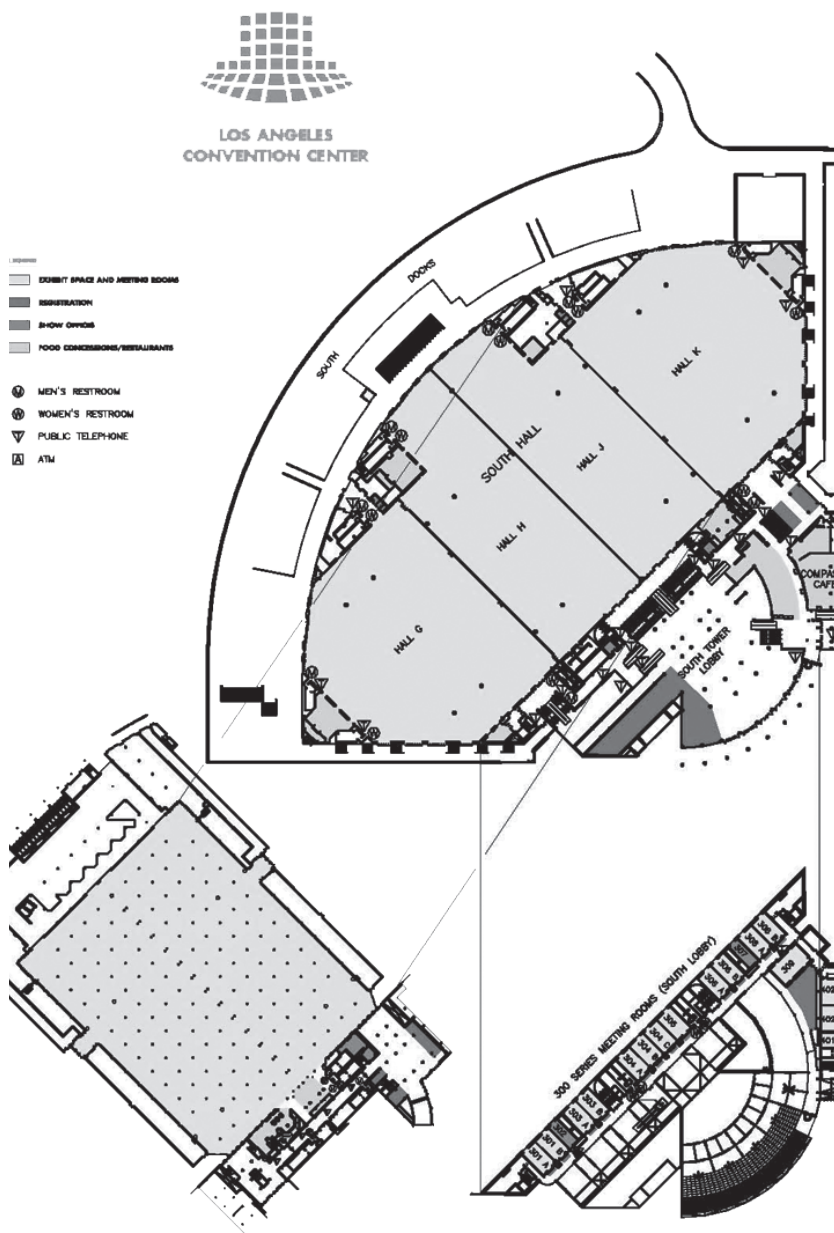
Saturday 3:00 p.m.–6:00 p.m.
 Sunday–Monday 8:00 a.m.–7:00 p.m.
 Tuesday–Wednesday 8:00 a.m.–6:00 p.m.
 Thursday 8:00 a.m.–7:00 p.m.
 Friday 8:00 a.m.–2:00 p.m.

Tour Booth

South Hall Lobby

Sunday–Friday 8:00 a.m.–5:30 p.m.

Map of Los Angeles Convention Center



Map of Los Angeles Convention Center

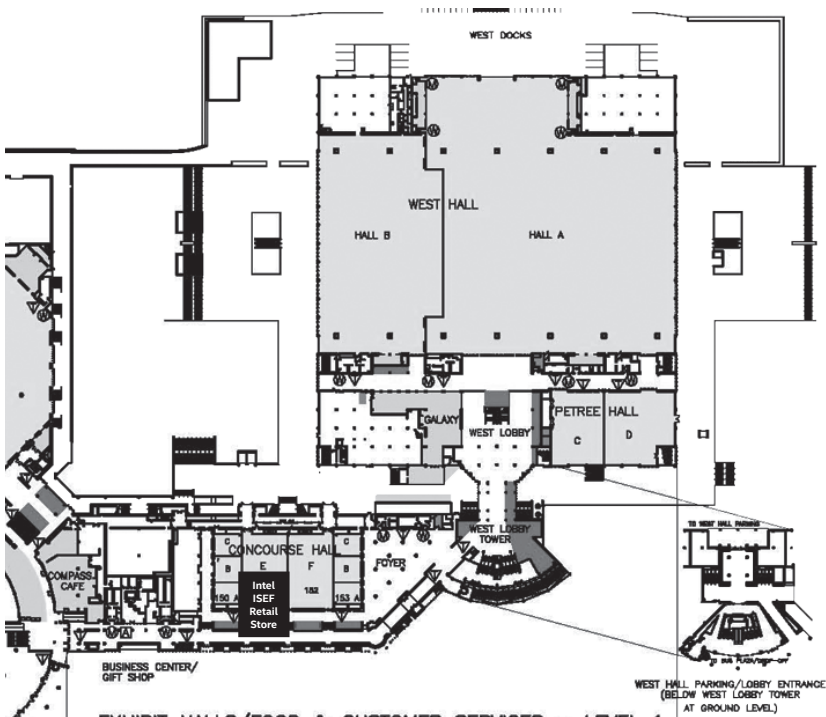
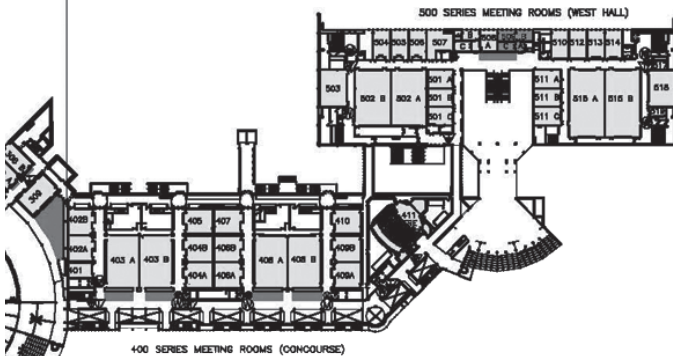
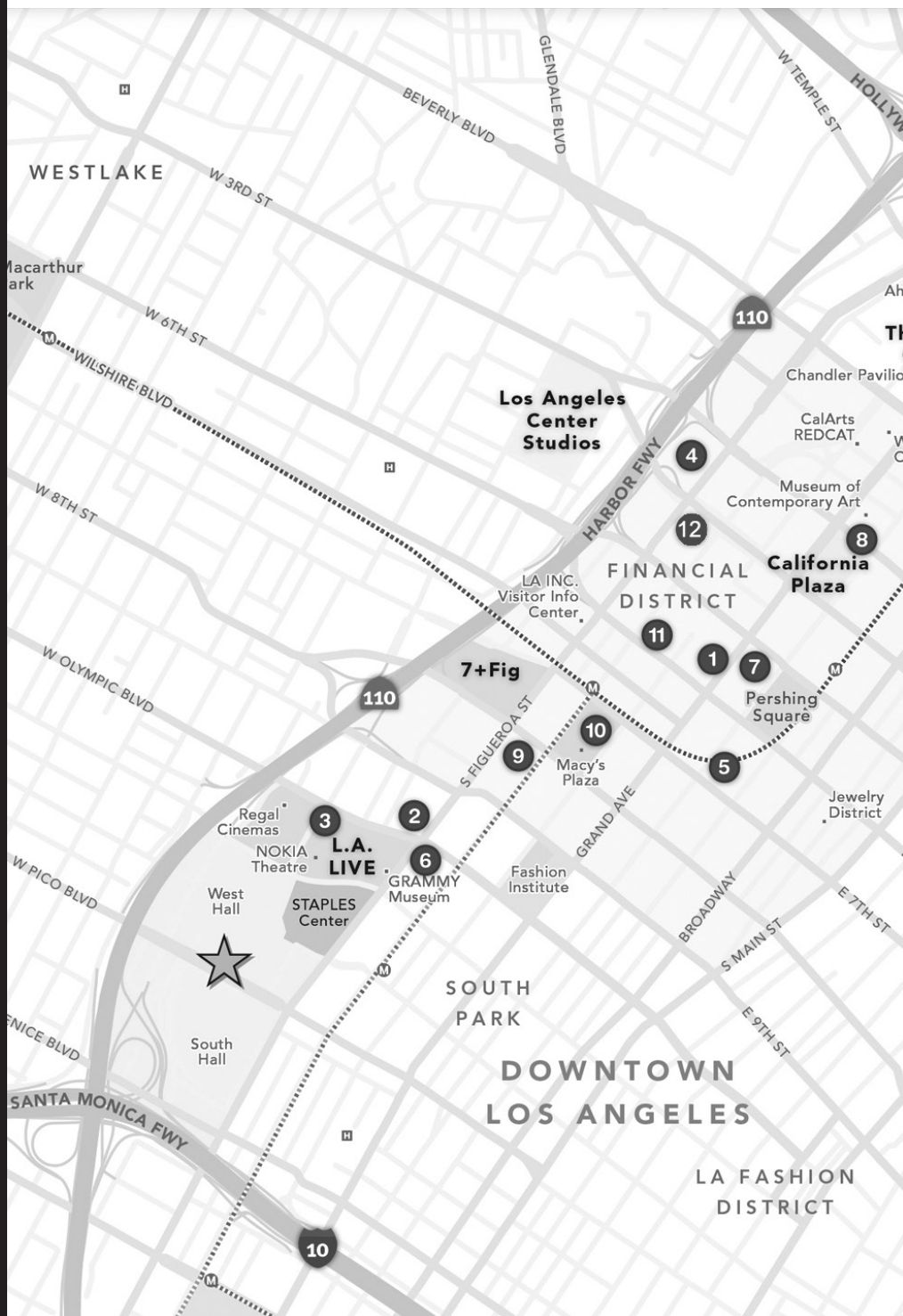


EXHIBIT HALLS/FOOD & CUSTOMER SERVICES – LEVEL 1



MEETING ROOMS – LEVEL 2





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



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Metro - www.metro.net

Los Angeles
TOURISM & CONVENTION BOARD

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.
<i>(Afterwards by appt.)</i> | Project Drop–Off | LACC South Hall J/K Loading Dock |
| | 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 |
| | <i>Finalists and Student Observers Only—Casual Attire</i>
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. | |

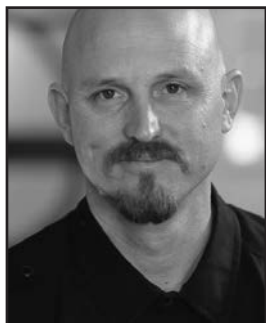
Monday, May 12

- | | | |
|------------------------------|--|-------------------------|
| 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 | Halls G/H |
| | <i>Casual Attire— Doors open at 6:00 p.m.</i> | |

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.

**Be part of
the show!**
You are invited to
participate in the keynote
by tweeting questions
with #intelISEF.

Questions will be selected
and asked after the keynote.
Start tweeting now!

7:00 p.m.–8:30 p.m.

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.

8:00 p.m.

Final Project Infractions List

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

Tuesday, May 13

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

408-411

See full schedule on pages 30–37.

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.

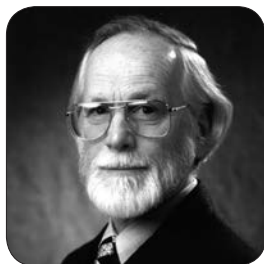
Don't miss the

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



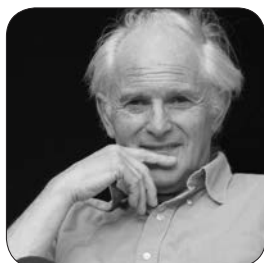
J. Michael Bishop
University of California,
San Francisco
Nobel Prize – Physiology
or Medicine
1989



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



Joe Palca
Science Correspondent, NPR
Moderator

presented by
Intel Corporation

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

7:45 a.m.–11:45 a.m.	Exhibit Hall Open <i>Finalists at Projects for Interviews—Professional Attire</i> Finalists & Judges only	Halls J/K
8:00 a.m.–6:00 p.m.	The Intel Quad 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!	South Hall Lobby
9:00 a.m.–4:30 p.m.	Symposia See full schedule on pages 30–37.	408-411
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	Halls J/K
3:15 p.m.–4:00 p.m.	Finalists at Projects for Unscheduled Interviews Finalists and Special Awards Judges only—Professional Attire	Halls J/K
4:00 p.m.–5:00 p.m.	Finalists at Projects for Final Judging Session Finalists and Judges only—Professional Attire	Halls J/K
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

8:00 a.m.–3:00 p.m.	Public Education Outreach Day Open to the general public from 9:00 a.m. – 9:00 p.m.	Halls J/K
8:00 a.m.–5:00 p.m.	Intel ISEF Expo 2014	Concourse Hall
8:00 a.m.–6:00 p.m.	The Intel Quad 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!	South Hall Lobby
9:00 a.m.–3:30 p.m.	Symposia See full schedule on pages 30–37.	408–411
10:00 a.m.–2:00 p.m.	All Finalists Required at Projects Meal vouchers will be provided to Finalists for Lunch.	Halls J/K
1:00 p.m.–3:00 p.m.	Advisory Council Meeting	408A
7:00 p.m.–10:00 p.m.	Special Award Ceremony (Doors open at 6:30 p.m.)—Professional Attire Ceremony in which Special Award Organizations, academic institutions and government agencies give awards.	Halls G/H

Friday, May 16

9:00 a.m.–11:30 a.m.	Grand Awards Ceremony Sponsored by Intel (Doors open at 8:30 a.m.)—Professional Attire All students are to be seated by 8:45 a.m. Awards Ceremony where winners from each category are announced as well as the top overall winners for Intel ISEF 2014.	Halls G/H
11:30 a.m.–2:00 p.m.	Exhibit Hall Open for Project Teardown Finalists take down and pack projects for return home. Any stored packing material will be at project booth by 11:30 a.m. Finalists transporting their own projects will load them upon completion of packing. Projects being shipped via UPS or GES/heavy freight must be packed and processed for shipping by 2:00 p.m. Intel ISEF 2014 nametags required at all times during dismantling. No exceptions will be made.	Halls J/K
12:30 p.m.–Midnight	Tour to Disneyland Intel ISEF Attendees may register for this tour for a fee at the Tours Desk in the South Hall Lobby. This is a great opportunity for those staying Friday night to enjoy one of Southern California's premier destinations.	South Hall Lobby

Not a sponsored event

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

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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 stories 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

10:30 a.m. – 11:00 a.m.

Room: 409AB

15 – So You Want to Write about Science on the Internet?Bethany Brookshire, *Science News for Students*, Eureka! Lab blogger, Washington, DC

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. – 11:30 a.m.

Room: 411

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. – Noon

Room: 408B

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 InternetBethany Brookshire, *Science News for Students*, Eureka! Lab blogger, Washington, DC

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

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

2:15 p.m. – 3:15 p.m.

Room: 409AB

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.

Room: 410

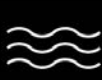
40 – 4-H and STEM: Imagine the Possibilities and Seize the Opportunities

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



- 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](https://twitter.com/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. @ <i>Westin</i>	404 S. Figueroa St., #418A	(213) 238-0802
Bottle Rock—Downtown LA	1050 Flower St.	(213) 747-1100
The Brasserie @ <i>Sheraton Downtown</i>	711 S. Hope St.	(213) 488-3500
Bugis St. Brasserie @ <i>Millennium Biltmore</i>	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 @ <i>LA Athletic Club</i>	431 W. 7th St.	(213) 625-2211
The Farm of Beverly Hills @ <i>LA LIVE</i>	800 W. Olympic Blvd.	(213) 747-4555
First & Hope	710 W. First St.	(213) 617-8555
Fleming's Prime Steakhouse @ <i>LA LIVE</i>	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 @ <i>JW Marriott LA LIVE</i>	900 W. Olympic Blvd.	(213) 765-8600
Katsuya @ <i>LA LIVE</i>	800 W. Olympic Blvd.	(213) 747-9797
Kendall's Brasserie & Bar	135 N. Grand Ave.	(213) 972-7322
LA Market @ <i>JW Marriott LA LIVE</i>	900 W. Olympic Blvd.	(213) 765-8600
Lakeview Bistro	404 S. Figueroa St.	(213) 624-1000
Lawry's Carvery @ <i>LA LIVE</i>	1011 S. Figueroa St., B115	(213) 763-5441
Live Basil @ <i>LA LIVE</i>	800 W. Olympic Blvd.	(213) 746-5483
McKay's	3540 S. Figueroa St.	(213) 748-4141
Nest at WP24 @ <i>JW Marriott LA LIVE</i>	900 W. Olympic Blvd.	(213) 743-8824
New Zealand Natural Ice Cream (LA. 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 @ <i>LA LIVE</i>	800 W. Olympic Blvd.	(213) 746-2646
The Restaurant @ <i>The Standard</i>	550 S. Flower St.	(213) 439-3030
Stafford + Mathis @ <i>Luxe City Center</i>	1020 S. Figueroa St.	(213) 748-1291
Rock'N Fish @ <i>LA LIVE</i>	800 W. Olympic Blvd.	(213) 748-4020
Rosa Mexicano @ <i>LA LIVE</i>	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 @ <i>LA Live</i>	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 @ <i>LA LIVE</i>	800 W. Olympic Blvd.	(213) 748-9700
WP24 @ <i>JW Marriott LA LIVE</i>	900 W. Olympic Blvd.	(213) 743-8800
Yard House @ <i>LA LIVE</i>	800 W. Olympic Blvd.	(213) 763-5441

Locations of Noted Attractions

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

Banks

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

Copy and Mail Services

FedEx Office Print and Ship Center	800 Wilshire Blvd. @ 7th St.	(213) 892-1700
	404 S. Figueroa St.	(213) 622-2045
	@ Westin Bonaventure	
PIP Printing & Marketing Services	700 Wilshire Blvd. @ Hope St.	(213) 489-2333
Universal Reprographics	2520 W. 6th St., #105	(213) 365-7768
	@ S. Coronado St.	
The UPS Store	645 W. 9th St. @ Flower	(213) 620-0081
US Post Office	750 W. 7th St. @ Macy's Plaza	(800) 275-8777

Drugstores

Rite Aid	600 W. 7th St. @ Hope St.	(213) 896-0083
Walgreens	617 W. 7th St. @ Grand Ave.	(213) 694-2880

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

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

Medical/Dental

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

Miscellaneous Stores

Staples Office Supply	3223 W 6th St.	(213) 738-9837
	@ S. New Hampshire Ave.	
City Target	735 S. Figueroa St. @ 7th St.	(213) 330-4543
Macy's	750 W 7th St. @ Flower St.	(213) 628-9311

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:

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**Society for Science & the Public and Intel thank the dedicated
Committee members of Intel ISEF 2014:**

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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

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

Mimi Alkire
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stsandisef.tumblr.com

blogs.intel.com/csr

In 1996, Intel became the title sponsor of the Intel ISEF. Since then, it has raised the program's visibility and made the Intel ISEF the world-renowned competition that it is, with true international participation and excellence. Society for Science & the Public thanks Intel for its many contributions to the Intel ISEF.

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





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

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We want your feedback.

Please take a few moments to provide your feedback on your experiences at Intel ISEF 2014.



After the fair, follow the link
<https://student.societyforscience.org/attendees>



Get Involved.

SSP and Intel are proud to announce that the Intel International Science and Engineering Fair will be held in Pittsburgh, Pennsylvania in May 2015.



**Volunteer, judge,
or interpret.**

To learn more:
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Countries, regions, and territories participating in Intel ISEF 2014

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 Danielle 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 Efraín 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

Sydney, AUS002, Young Scientist

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_2O_3 , Fe_3O_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: Seadet Veysova, Seadat Veysova

BELARUS

Minsk, BLR001, BelISEF

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 Kondratyuk, 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 Teofilo

BI005 L- Asparaginase Production from Kefir: An Alternative for the Treatment of Acute Lymphoblastic 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 Ambientes

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, São Paulo, Brazil, T: Marcio Rossi Marcio
- MI003 Mitochondria: Different Adaptation to Grow Conditions with Possible Implications to Infectivity**
Barbara Cohen, 17, Senior, Escola Antonietta 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 Croata (*Neoglaziovia variegata*) by High Performace Liquid Chromatography: An Effective Antibacterial and Antifungal Alternative?**
Francisco Mairton Lima, 16, Sophomore; Francisco Daniel Adriano, 16, Sophomore, Escola Estadual de Educacao Prossissional 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**
Gabriel 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, Ribeirão 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**
Raíssa Müller, 18, Senior; Gabriel 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

BULGARIA*Sofia, BGR001, Bulgarian Science and Innovation Fair***MA034 On the Lower Central Series of PI-algebras**

Rumen Rumenov Dangovski, 18, Senior, Sofia High School of Mathematics, Sofia, Bulgaria,
T: Pavel Etingof

MA035 Covering Squares of Side Length $n+\mu$ with Unit Squares

Rayna Dimchova Gadzheva, 18, Junior, Mathematical High School 'Konstantin Velichkov',
Pazardzhik, Bulgaria, T: Angel Velkov

ME064 Computer Enhanced Analysis of Images from Immunohistochemistry

Lyubomir Lyubchov Yanchev, 19, Senior, Private Language School Erich Kaestner, Sofia,
Bulgaria, T: Zheko Naychov

CANADA*Canada, CAN002, Youth Science Canada - Team Canada***BE030 Perception of Facial Expression of Emotion**

Danila Alferov, 16, Junior, A.B. Lucas Secondary School, London, Canada, T: Colleen Fletcher

CB041 Production of a Viral Enhancer Protein Using a Bacterial Platform

Adamo Young, 17, Senior, Lisgar Collegiate Institute, Ottawa, Canada, T: David Wright

CS059 iSPI: Integrated System for Pest Identification

Ben Friesen, 15, Sophomore, Grimsby Secondary School, Grimsby, Canada, T: Stacey Carusetta

CS060 Tw-Lexa: A Novel Multifactor Social Media Analysis Algorithm

Daniel Mogilny, 15, Freshman, Richmond Hill, Ontario, Canada, T: Nina Dolgovykh

EE063 Nanofluid CPU Cooling: Novel Block Design

Duncan Bayard Stothers, 16, Junior, St. George's School, Vancouver, Canada,
T: Wallace MacKay

EE064 The Hollow Flashlights: Head and Hand

Ann Stasia Makosinski, 16, Junior, Saint Michaels University School, Victoria, Canada,
T: Kate Paine

EN050 iAid: A Novel Multimodal, Cloud-Based Navigation System for the Visually Impaired

Alexander Matthew Deans, 16, Junior, Académie Ste Cécile International School, Windsor,
Canada, T: Sarah Schlesinger

ET047 Fun in the Sun! Increasing Grätzel Cell Efficiency Using Diatomaceous Earth

Meagan Ann Fabel, 17, Senior, Walkerville Collegiate Institute, Windsor, Canada,
T: Michelle Fabel

ME060 Treating GBM BTSCs through Growth Factor Stimulation and Drug-Polymer Conjugate Therapy

Sujay Nagaraj, 17, Senior, Western Canada High School, Calgary, Canada, T: Alison Ozero

ME079 Isothermal Nucleic Acid Amplification System for Point-of-Care HIV Diagnosis

Nicole Sabina Ticea, 15, Sophomore, York House School, Vancouver, Canada,
T: Dennise Dombroski

ME080 Personalized Medicine: A Novel Quantum Dot Bioconjugate Targeted Cancer Therapy

Amit Scheer, 15, Sophomore, Colonel By Secondary School, Ottawa, Canada, T: Darren Yip

MI059 Identification of Novel Broad-Spectrum Antimicrobial Compounds in *Curcuma amada*

Varsha Jayasankar, 17, Senior, Sir Winston Churchill Secondary School, St. Catharines, Canada,
T: Gerry Hinton

*Hamilton, ON, CAN001, Bay Area Science and Engineering Fair***EM046 Passive Manipulation of Thermal Radiation: Dual Purpose Condensers to Provide Potable Water**

Calvin James Rieder, 17, Junior, Saint Thomas Aquinas Catholic Secondary School, Oakville,
Canada, T: George Geczy

ME078 Treat Chronic Lymphedema: The Effects of Apigenin, Diosmetin, and Chicoric Acid on TNF-Alpha and COX-2 Levels of Stimulated RAW 264.7 Macrophages

Catharine Antonina Bowman, 15, Sophomore, St. Mary Catholic Secondary School, Hamilton,
Canada, T: George Geczy

ME095 The Diagnostic Potential of Brain Derived Neurotrophic Factor in Mild to Moderate Depression

Arjuna Sathyadeep Maharaj, 17, Senior, Ancaster High School, Ancaster, Canada,
T: Reginald Varghese

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 Villarreal

EM303 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

Wenhao 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
- Chengdu, CHN008, Sichuan Science Fair*
- 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, HKG001, 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: To 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 Cardiotoxicity 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: Lu-Ping Chow

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: Soofin Cheng

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

Medellin, COL001, 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, CRI001, 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 Científico 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 (*Moniliophthora 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, CRI002, 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 Carballo-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, Zastávka, Czech Republic, T: Martin Dojiva

EE025 Personal Physiological Sensor Network Device

Marek Novak, 19, Senior, Gymnazium, 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, Gymnazium Christiana Dopplera, Prague, Czech Republic, T: Lubomira Balkova

- MI008 The Effect of Hyaluronic Acid and Glucose Concentration on Hyaluronidase Activity of Wound Pathogens *Staphylococcus aureus* and *Streptococcus agalactiae* Isolated from Chronic Wounds**
 Vaclav Kotyza, 18, Junior, Private Grammar School, Letohrad, Czech Republic, T: Martin Sojka
- PH010 Model of Soliton Waves**
 Jan Mazac, 19, Senior, Mendelovo Gymnázium Opava, Príspěvkova Organizace, Opava, Czech Republic, T: Petr Pavlíček
- Prague, EUB001, European Union Contest for Young Scientists (EUCYS)*
- ET067 Submergible Energy Apparatus – Linearly Extending Generator (SEA-LEG)**
 Alexander Heron Thanos, 18, Freshman, European School Munich, Munich, Germany, T: Gertraude Hofs
- ME114 Aspirin and Salicylic Acid in the Combination with Inhibition of PI3K Promote Cell Death in Malignant Melanoma**
- #** Emilia Petrikova, 19, Senior, The Secondary School of Jozef Gregor Tajovsky, Banska Bystrica, Slovakia, T: Helena Majerova

DENMARK*Copenhagen, DNK001, Unge Forskere*

- CH024 Astrobiology: The Formation of Life-Supporting Amino Acids on Cosmic Dust Particles**
 Alexander Morch, 19, Senior, Herlufsholm Kostskole og Gods, Naestved, Denmark, T: Niels Arnt Kristiansen
- ET066 Quantification of the Effect of Contamination in Lithium-Air Batteries**
 Emilia Wodzka, 19, Sophomore, Herlufsholm Kostskole og Gods, Næstved, Denmark, T: Jonathan Højberg

EGYPT*Cairo, EGY001, Cairo Science and Engineering Fair*

- BI036 Computational Prediction of Vaccine Potential Epitopes and 3D Structure of XAGE-1b for Non-small Cell Lung Cancer Immunotherapy**
 Mohamed Tarek Mansour, 17, Junior, Salman El Farisy High School, Cairo, Egypt, T: Tarek Mansour
- CS066 Eye Detection and Tracking-Based Communication System for Tetraplegia Patients**
 Abdullah Asem, 17, Senior, Dar Heraa Islamic Private School, Assiut, Egypt, T: Hamsa Abdel-Rahman
- CS314 Voice Recognition Based Elections Voting System for Blind**
 Enas Mohamed Safwat, 16, Sophomore; Nouran Mohamed Mohsen, 15, Sophomore, El-Gamaa Secondary School, Assiut, Egypt; El-Gamaa Sec School, Assuit, Egypt, T: Ahmed Hamed Saied
- ET312 Heating Houses Using a Friction-Based Heating System that Employs Renewable Energy Sources**
 Shady Hesham El Shazly, 16, Junior; Ahmet Alpaslan Kilic, 17, Senior, Turkish Salahaldin International School, Cairo, Egypt; T: Ethem Yuksel, Ethem Yüksel
- EV312 Water Integrated Desalination System Using Graphene Sheets and Silver Nano Particles**
 Marwa Abd El-Raouf Ibrahim, 16, Junior; Demiana Ayad Abdelmalak, 16, Junior; Mayar Mossad Allam, 16, Junior, Maadi STEM School for Girls, Cairo, Egypt, T: Ahmed Rafaat

Alexandria, EGY002, BA Science and Engineering Fair

- EE326 G-14: A New Kind of Multi-rotors**
 Fares Essam Helmy, 16, Sophomore; Abdelaziz Ahmad Elmasry, 16, Junior, Elnasrya Boys School, Alexandria, Egypt, T: Samer Elkholy, Tarek Swilem
- EM328 Vacuum Evaporator for Water Purification**
 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
- EN052 High-performance Solar Thermoelectric Energy Conversion System with Efficient Thermal Concentration**
 Abdallah Mohamed Felfel, 17, Junior, El-Madina Al-Monawra Secondary School, Alexandria, Egypt, T: Mohammed Nofal

ESTONIA*Tartu, EST001, Estonian Young Scientist Contest*

- BE032 Pulsic: An Intelligent Music Player for Joggers**
 Johanna Adojaan, 17, Sophomore, Hugo Treffneri Gymnasium, Tartu, Estonia, T: Kristjan Adojaan

EN053 Study of the Fluorescent Qualities of Yeasts in Different Liquid Environments

Annette Miller, 19, Senior, Tallinn School No.21, Tallinn, Estonia, T: Raivo Vilu

FINLAND*Helsinki, FIN001, Finland National Science & Engineering Fair***BE045 Musiclock**

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

FRANCE*Paris, FRA001, Olympiades de Physique***EN310 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

GEORGIA*Tbilisi, GEO001, Georgian Science Project Olympiad***PS044 Allergy among Students and Some Allergic Plants in Kutaisi (Imereti, Georgia)**

Natali Tchumburidze, 16, Junior, Georgian-American School "Progress", Kutaisi, Georgia, T: Tamar Cheishvili

*Tbilisi, GEO002, Leonardo da Vinci Fair***EM313 Active Filter**

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

EN016 Orthopedic Vest

Saba Mamukashvili, 17, Senior, Tbilisi #137 Public School, Tbilisi, Georgia, T: Liana Matiashevili

EN017 Transformer Clepsydron: Deployable Support Framework with Varying Direction of Unfolding

Temur Chichua, 16, Junior, Tbilisi #4 Public School, Tbilisi, Georgia, T: Nana Phartenadze

EN311 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

GERMANY*Leverkusen, DEU001, Jugend Forscht***CB309 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 Marksches

CH051 Dendritic Crystallization of Salts

Theresa Zeisner, 14, Sophomore, Okumenisches Gymnasium, Bremen, Germany, T: Jens-Henning Kreker

CH055 Supramolecular Host-Guest Complexes as Fluorescent Markers in Tumor Diagnostics

Gabriel Salg, 14, Senior, Hanns-Seidel-Gymnasium Hosbach, Hoesbach, Germany, T: Roland Full

CS085 Conway's Labyrinth

Jessica Lackas, 14, Senior, Max-Planck-Gymnasium, Saarlouis, Germany, T: Tim Lethen

EE336 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

MA054 Dynamic Mathematics on Smartphones and Tablets

Lennart Julian Kleinwort, 14, Freshman, Friedrich-Koenig-Gymnasium, Wurzburg, Germany, T: Robert Strich

PH077 Measuring Water Waves

Daniel Pfluger, 13, Senior, Gymnasium Johanneum Lueneburg, Lueneburg, Germany, T: Michael Rode

PH314 Rising Water

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

PS045 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-SENGON: Sengon 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

*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 Aziziya 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 Wisnujati, 18, Senior, Sma Negeri 1 Yogyakarta, Yogyakarta, Indonesia, T: Zainal Abidin

IRAQ*Erbil, 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 Mawlod 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 Salahaddin 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 Valent Nano Particles

Bawar Mohammed Taha, 16, Sophomore; Aryan Harbi Saido 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, Christian Brothers School Syngue 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, Colaiste Chiarain, Limerick, Ireland, T: Edel Farrell

MA036 On the Hamiltonicity of Cubic, Polyhedral, Bipartite Graphs

Paul Clarke, 17, Junior, St. Paul's College Raheny, Dublin, Ireland, T: Brian Smyth

ISRAEL*Jerusalem, ISR001, The Israeli Young Scientists Contest***BI014 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, 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 α -Synuclein rs356219 Polymorphisms in Patients with Gaucher Disease and Parkinson's Disease

Daniel Ben Zion Ioscovich, 17, Senior, Israel Arts and Science Academy, Jerusalem, Israel, T: Anat Maoz

ITALY

Milano, ITA001, *I Giovani e le Scienze*

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

Tokyo, JPN001, *Japan Students Science Awards*

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

AS303 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 Toryo 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

PH304 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

Yasuhito 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 *Anthodia* 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 Rasmi Albaidin, 15, Sophomore, Aljazeera School, Amman, Jordan, T: Osama Rasmi Albaidin
- BE316 The Blind's Device**
Ahmad Thaeer 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 Sabouba, 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**
Laith 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 Kamar, 16, Sophomore; Asset Zhanabayev, 17, Junior, Republican Physics and Mathematics School named after O.Zhautikov, 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. Zhautikov, Almaty, Kazakhstan, T: Ibragim Ibatulin

KENYA

Nairobi, KEN001, Kenya Science and Engineering Fair

- CH308 Biofuel from Tree Fungus**
Davyani 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 Amrishi 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, Atert-Lyceee 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 Zulhimi Syahir Ahmad Shohailee, 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 Osman Abadi, 16, Junior; Muhammad Shahradsman 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 Slurpper: Gas Operated Super Suction & Spray Device (GOS³D)

Dharsyanth Rao A/I 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

Montserrat Escarcega Ramirez, 18, Senior; Tania Lizbeth Cortes García, 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 Saucedo Lopez, 18, Senior; Felipe De Jesus Saucedo 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 García Hernandez, 17, Senior, Centro de Bachillerato Tecnológico Industrial y de Servicios No. 260, Puebla, Mexico, T: Esteban Martínez Bonilla

ET038 Hidrociclismo

Saul Pérez Arana, 16, Junior, Preparatoria de Tonalá, Universidad de Guadalajara, Tonalá, 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 Esquimo Whey of Natural Cheese an Alternative to Prevent Fires at Home

Clara Gomez Quintana, 18, Senior; Jesus Benitez Serrano, 17, Junior, Colegio de Estudios Científicos y Tecnológicos 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 Agustin Rodriguez Fajardo, 18, Junior, Centro de Enseñanza 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 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 Yisa 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 Mariana Islands 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 Senior High School, Tinian, Northern Mariana 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 Zakharova, 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 Faire

BE313 Robot of Upbringing Genius Kids for the Future

Adam Saif Alhinai, 14, Sophomore; Asaad Said Alhinai, 14, Sophomore; Alwaleed Mohammed Alnasseri, 16, Sophomore, Abu Aldarda Public School, Ibri, Oman, T: Abdullah Alsauafi

- EE331 Ascender Cleaner**
Shahad Aadil Alshezawi, 14, Freshman; Doaa Nasser Almaqbali, 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
- EV057 Prevention of Ozone (O₃) by Environmental Protection Filter (EPF)**
Sidra Riaz, 16, Junior, C.M.A Paradise School, Karachi, Pakistan, T: Sohail Ibrahim
- ME113 Evaluation of Herbal Product for Cure of Hemorrhoids**
Syeda Minahil, 18, Senior, Forward Girls Degree College, Peshawar, Peshawar, Pakistan, T: Mohsina Asmat

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. Altaradeh, 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**
Baraah O. Eyeyat, 16, Junior, Deer Abu Daeef Girls Secondary School, Jenin, Palestine, T: Samar Qassem Zakarneh
- 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

- PS311 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 Hinostrero 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 Lahorra

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 Ogólnokształcące 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, Portuguese 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, Brigida 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 Rodríguez, 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 Sanchez 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
- ME055 Dengue or Leptospirosis?**
Miguel Geraldo Rodriguez, 16, Junior, Specialized School in Science and Mathematics Genaro Cautino Vazquez, Guayama, Puerto Rico, T: Jessica Martinez
- Humacao, TEPR05, Humacao 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 Sulphydic 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 Annjulisha Castilloveitia, 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 Giral, 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 García, 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 Hernández-García

*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, Matemáticas y Tecnología (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 Transcarbamylase Deficiency (OTC) and Citrullinemia (CIT) Among Puerto Ricans

Andrea Monique Rivera-Corona, 17, Senior, Escuela Secundaria Especializada en Ciencias, Matemáticas y Tecnología (CIMATEC), Caguas, Puerto Rico, T: Shirley Marie Martinez

PS025 The Cactus as a Growing Medium for Tomatoes

Keitlyn Marie Adorno, 16, Junior, Escuela Especializada en Ciencias y Matemáticas Brígida Álvarez Rodríguez, Vega Baja, Puerto Rico, T: Evelyn Rodriguez

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-Sulaiti, 16, Junior; Abdulaziz Abdulla Shams, 16, Junior; Majid Abdulrasheed E. Ahmednooh, 16, Junior, Qatar Technical, Doha, Qatar,
T: Hesham Fouad Mohamed

- EE325 Development of Environment-Friendly Car Model that Generates Electric Energy**
Ibrahim Ismail Kenawy, 16, Junior; Yousef Mohammed Al-Jabir, 16, Junior; Mina Botros, 17, Junior, Tariq Bin Ziyad Independent Secondary School, Doha, Qatar, T: Hassan Elsayed Mansour, Hassen Elsayed Mansour
- EM322 Cleaning Streets by Using Solar Energy**
Saleh Abdulsalam Saleh Al-Safri, 15, Junior; Salman Hussain S.A. Al-Shamari, 15, Junior; Talal Rodayman H A Al-Shamari, 16, Sophomore, Shahanyah, Doha, Qatar, T: Saad Fouad Fahmu
- EM323 Marine Platforms: Scientific Ways of Protection from Oil Sea Pollution (Sealant Oil Device)**
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

REPUBLIC OF MOLDOVA

Chisinau, MDA001, Moldova Science and Engineering Fair

- CS010 FlyPy: Embedding a Compiled Language into an Interpreted One to Get Maximum Performance**
Dumitru Savva, 17, Junior, "Orizont" Lyceum, Chisinau, Republic of Moldova, T: Sergiu Corlat
- CS084 Voice Integrated Development Environment for People Who Are Blind, Myopia Affected or Have RSI**
Diana Marusic, 16, Sophomore, Theoretical Lyceum "Ion Creanga", Chisinau, Republic of Moldova, T: Iurie Marusic
- PS305 Healthy Grapevines without Heavy Metals**
Anastasia Jeleznii, 16, Sophomore; Dimitrie Ginju, 15, Freshman, "Mihai Marinciuc" Lyceum, Chisinau, "Mihai Marinciuc" Lyceum, Chisinau, Republic of Moldova, T: Gheorghe Ginju

ROMANIA

Suceava, ROM001, Romania Science and Engineering Fair

- BE302 Games of the Future: Brainwave-controlled Devices**
Stefan Dascalu, 17, Junior; Octavian Coca, 17, Junior, Colegiul National "Petru Rares" Suceava, Suceava, Romania, T: Anca Greculeac
- EM002 Solar Hot Air Generator Construction and Applicability**
Daniel Cosovanu, 18, Junior, Tomsa Voda Technological High School, Solca, Romania, T: Ilie Cosovanu
- EN304 The Spider Is Changing the Game in the Building Industry**
Alexandru Stefan Iov, 17, Junior; Alexandru Mihai Glontaru, 17, Junior, Tudor Vianu National High School of Computer Science, Bucharest, Romania, T: Dan Milici

RUSSIAN FEDERATION

Chernogolovka, RUS005, Avangard

- AS306 Three New Species of the Genus *Novophytoptus roivainen* 1947 (Acariformes, Eriophyoidea) from Russia, Serbia and USA**
Timofei Petrushenko, 15, Sophomore; Valentina Ruazantceva, 16, Sophomore, Academic Gymnasium of Saint-Petersburg State University, Saint-Petersburg, Russian Federation, T: Philip Chetverikov
- CH025 Dendritic Polymers as a Modifier of Chromatographic and Electrophoretic Systems in the Determination of Vitamin and Amino Acids**
Alina Bogdanova, 17, Junior, Academic Gymnasium of Saint Petersburg State University, Peterhof, Russian Federation, T: Anna Kartsova
- CS045 Using the Fractal Dimension to Diagnose Cancer**
Nataliya A. Koryavka, 16, Sophomore, Municipal Budget Educational Institution "Lyceum No 3", Sarov, Russian Federation, T: Igor Stolyarov
- Moscow, RUS002, Junior - I*
- CH053 New Approach to the Block Synthesis of Alginate Fragments: The Molecular Geometry and Stereo Selectivity of the Mannuronyl Donors**
Ekaterina Kutsenok, 17, Senior, Moscow Chemical Lyceum No. 1303, Moscow, Russian Federation, T: Dmitry Argunov
- CH317 Design of Novel Poly(oximinoalkyl) Amines and their Applications in Catalysis**
Valentin Sergeevich Dorokhov, 17, Junior; Daniil Patrikovich Agababyan, 16, Sophomore, Moscow Chemical Lyceum No. 1303, Moscow, Russian Federation, T: Artyom Semakin

- CS324 Environment for Probabilistic Amino Acid Analysis**
Michael Shtephan, 16, Junior; Ilya Borovitinov, 17, Junior, Lyceum 1533 of Information Technologies, Moscow, Russian Federation, T: Alexander Giglavy
- 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
- Moscow, RUS006, Scientists of the Future Fair*
- BI306 Ligand-directed Macromolecular Urocanic Acid Conjugate for Treating Cancer: Design and Synthesis**
Darya Maximova, 17, Sophomore; Ekaterina Mozgunova, 17, Junior, Municipal Budget General Educational Institution "Lyceum No.22 "Nadezhda Sibiri", Novosibirsk, Russian Federation, T: Tatyana Godovikova
- EE050 Ultrasonic Atomizer**
Anastasiia Korovianskaia, 17, Junior, Municipal Educational Institution "Gymnasium No.5", Yubileyniy, Russian Federation, T: Vladimir Lebedev
- EM035 Express-Diagnosis of Microbial Communities of Soil Polluted with Oil Products**
Valeria Vostroknutova, 17, Junior, Municipal Autonomous Educational Institution Gymnasium, Tchaikovsky, Russian Federation, T: Oksana Galakhova
- MA031 Matrix Generalizations of the Euler Function**
Danila Baigushev, 16, Sophomore, Lyceum "Vtoraia Shkola", Moscow, Russian Federation, T: Pavel Bibikov
- Nizhny Novgorod, RUS001, ROST*
- CS310 Translator of Gestures: Human Interface Software**
Anna Dmitrievna Kustareva, 17, Junior; Maxim Alexeevich Sokolov, 17, Junior, Municipal Budget Educational Institution "Lyceum No.165", Nizhny Novgorod, Russian Federation, T: Ida Solomonovna Smirnova
- EE317 Digital Sandwich: Tasty Terabytes**
Nikita Chernyadev, 17, Junior; Dmitry Khodebko, 17, Junior; Alexander Shkitilev, 17, Junior, Lyceum No.82, Nizhny Novgorod, Russian Federation, T: Natalia Vargina
- EN033 Laser Speckle-Contrast Imaging: Bloodflow Mapping**
Vsevolod Evgenyevich Fomin, 17, Junior, Lyceum No.40, Nizhny Novgorod, Russian Federation, T: Pavel Andreevich Shilyagin
- St. Petersburg, RUS004, Intel Baltic Science and Engineering Fair*
- CS044 Android2Mouse**
Arseny Kirillovich Nerinovskiy, 17, Junior, Peterhof Gymnasium of Emperor Alexander II, Saint-Petersbourg, 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 Khadary, 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 High 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-Belaid, 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, Dwadmi, 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, Jeddah, 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 Alislamia, 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 Svateho 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 Ulicna, 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 II College, Phokeng, South Africa; Lebone II 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 Clerence 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 Ebersson
- 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 Mideumi 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: Chanhee 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; Nayoung Kim, 16, Junior, Daegu Il 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**
 Chaeun 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

Barcelona, SPN001, *Exporecerca Jove*

- 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
- MI076 From the Antibiotic Resistance Acquisition by Bacteria to the Impact of the Resistant Tuberculosis on Society through a Computer Modelling (IbM)**
 Sergi Macia Munoz, 16, Junior, School: INS Escola Industrial, Sabadell, Spain, T: Mireia Panades Uroz

SRI LANKA

Colombo, LKA001, *Sri Lanka Science & Engineering Fair*

- BI015 Using Nano Technology as an Anticancer Agent: Anticancer Effect of Catechin-coated Iron Oxide Nano Particles on Leukemic Monocytes**
 # Godabaddage Rakitha Dilshan Malewana, 18, Senior, Nalanda College, Colombo, Sri Lanka, T: Upeksha Darshani Abeysekara
- 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 Amila Hasanth Perera
- EE029 Versatile Field Construction Machine for Paddy Cultivation**
 Wijesuriya Arachchilage Namal Udara Piyasiri, 18, Senior, Bellankadawala Maha Vidyalaya, Thambuththegama, Sri Lanka, T: Subasinghe Mudiyanseelage Nalinda Sampath Siriwardhana

SWEDEN

Stockholm, SWE001, *Utställningen Unga Forskare*

- CS070 Algorithm for Machine Reading**
 Axel Wilhelm Linnert Ericsson, 18, Senior, Viktor Rydbergs 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 Svensson, 18, Senior, Katedralskolan in Linköping, Linköping, Sweden, T: Maria Forsberg

SWITZERLAND

Bern, CHE001, *Swiss Youth in Science*

- 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 Photeam, 18, Senior; Issariya Boonjang, 18, Senior, Princess Chulabhorn's College
Lopburi, Lopburi, Thailand, T: Warin Jongtan**MA306 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: Sukallaya 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 Chongruijipinyo, 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; Samsenwittayalai 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; Jakkrapop 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 Wattanaprakarnchai, 17, Junior; Kwansiri
Krairaweengarmwijitr, 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 Gökten Ozmenekse, 18, Senior, Edirne Suleyman 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 Repressor in Teicoplanin Producer *Actinoplanes teichomyceticus***
Kseniya-oksana Zhukrovska, 17, Junior, Lviv Academic Gymnasium at the National University "Lviv Polytechnic", Lviv, Ukraine, T: Oleksandr Yushchuk
- ET057 Wave-Powered Desalinator**
Mykhailo Lytovchenko, 16, Sophomore, Dnipropetrovsk Chemical Ecological Lyceum, Dnipropetrovsk, Ukraine, T: Yurii Lytovchenko
- MI024 Elucidation of the Deterministic Properties of the Optimal Probiotic Microorganisms**
Arseniy Gordeychyk, 15, Sophomore, Kiev Public School #80, Kiev, Ukraine, T: Lubov Sheremetova

UNITED ARAB EMIRATES

Abu Dhabi, ARE002, Think Science Competition

- CH316 # The Use of Bacteria from Soil of Sweihan Area to Clean up Wastewater**
Khalifa Saleh Almheiri, 16, Junior; Mohammed Mubarak Almehiri, 16, Junior; Mohammed Ali Almazrouei, 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**
Reem Zaid Al Menhali, 16, Junior; Rawan Habreesh Al Katheeri, 16, Junior, Applied Technology High School-Abu Dhabi-Girls, Abu Dhabi, United Arab Emirates, T: Buthaina Ali Abandah
- ET318 Multi-Purpose Exercise Machine**
Mohamed Hassan Al Dhanhani, 14, Sophomore; Mohamed Saeed Al Zarooni, 15, Sophomore, The Glenelg School of Abu Dhabi, Abu Dhabi, United Arab Emirates, T: Mohamad El Sayed Desouky, Mohamad Desouky
- EV316 Grains of Gold**
Shamma Faisal Al Bastaki, 17, Senior; Hayat Abdulredha Abu Alhassan, 16, Senior, Al Itihad Private School-Jumeira, Dubai, United Arab Emirates, T: Sadek Anwer Sheetah

UNITED KINGDOM

Birmingham, GBR003, Young Engineers for Britain

- 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

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

- 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

Birmingham, USAL02, Central Alabama Regional Science and Engineering Fair

- 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

Huntsville, USAL03, North Alabama Regional Science and Engineering Fair

- 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

- PH028 The Development of a Novel, Low Cost, High Power, Tunable UV Supercontinuum Laser Source**
 ## Joseph Patrick Lee, 17, Junior, Saint Peter's Academy, New Market, Alabama, T: Kevin Nishimuta
Huntsville, USAL50, Alabama Science and Engineering Fair
- CB049 Predicting Eye Color Genotype Based on Phenotype**
 Madelyn Elizabeth Kloske, 15, Freshman, Pope John Paul II Catholic High School, Huntsville, Alabama, T: Brian Finzel
- EE079 Hunka Hunka Hybrid Luv, Phase II: Design and Construction of a Multipurpose Scalable Power Electronics Module for Electric or Hybrid Electric Vehicles**
 Drew Prevost, 16, Sophomore, Covenant Christian Academy, Huntsville, Alabama, T: Rhonda Lisauckis
- EE332 The Laser Harp-Inator**
 Paul Boulet, 18, Senior; Andrew David Carlson, 17, Senior, Saint Peter's Academy, New Market, Alabama, T: Jon David Jackson
- ME104 A New Pathway for Alzheimer's Drugs: Modification of BACE1 to Decrease the Release of Beta Amyloid in the Brain**
 Rahul Lal, 14, Freshman, Auburn Junior High School, Auburn, Alabama, T: Jacque Middleton
- ME117 Searching for the Fountain of Youth: Exploring the Relationship Between the Natural Phenol Resveratrol and Diet to Examine Longevity in *Drosophila melanogaster***
 Rachel Michelle England, 18, Freshman, School: Demopolis High School, Demopolis, Alabama, T: Brian Burnes
Livingston, USAL05, West Alabama Regional Science Fair
- EE031 Breaking Point**
 Danika Louw, 14, Freshman, Holy Spirit Catholic High School, Tuscaloosa, Alabama, T: Deborah Samaniego
Mobile, USAL04, Mobile Regional Science Fair
- EE048 More than a Feeling: A 3D Haptic Vest for the Visually Impaired**
 # Sean Alexander Benson, 17, Junior, Satsuma High School, Satsuma, Alabama, T: Judy Tapia
- ET060 Energy Harvesting via Pyroelectric Effect**
 Rupa Palanki, 15, Freshman, WP Davidson High School, Mobile, Alabama, T: Srinivas Palanki

ALASKA

Anchorage, USAK50, Alaska Science and Engineering Fair

- AS036 Ichthyophonous vs. Proteins: Should We Be Eating These Fish?**
 # Alisa Rachael Aist, 17, Junior, Polaris K-12 School, Anchorage, Alaska, T: Andrea Evans
- EN048 Novel Lateral Flow Test Design to Detect the Presence of Paralytic Shellfish Poisoning**
 ## Taylor Jade Seitz, 16, Junior, Polaris K-12 School, Anchorage, Alaska, T: Andrea Evans
Juneau, USAK01, Southeast Alaska Regional Science Fair
- AS007 Genetic Differentiation of Capelin (*Mallotus villosus*) in the Bering Strait and Southeast Alaska**
 Raven Ward, 14, Freshman, Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith
- AS302 Juvenile Chum Salmon (*Oncorhynchus keta*) Migration Timing through Icy Strait from Different Southeast Alaska Hatcheries**
 Gabrielle Duvernay, 16, Sophomore; Anouk Otsea, 16, Sophomore, Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith
- PS001 The Effects of Distance from a Stream on the Abundance of Ten Lichen Genera in Riparian Habitats**
 Madeline Handley, 16, Sophomore, Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith

ARIZONA

Phoenix, USAZ50, Arizona Science and Engineering Fair

- AS048 Effects of *Lygus*-specific *Bacillus thuringiensis* Insecticidal Proteins on *Lygus* & Its Predators**
 Gen Fitzgerald, 17, Junior, Desert Vista High School, Phoenix, Arizona, T: Birgit Musheno
- BE314 The Effect of Academic Rigor on Sociometric Status and Subjective Well-Being**
 Aundrea Degravina, 17, Senior; Shea Van Slyke, 17, Senior, Hamilton High School, Chandler, Arizona, T: Debbie Nipar

- 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 Guskjolen, 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*

BI314 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 Magoullick

MA002 The Secret Formula

Brandon Owen Locknar, 15, Freshman, Chaffin Junior High School, Fort Smith, Arkansas,
T: Terry Lynn Overbey

PS302 Stress Signals: Evaluating Cellular Signals in Cotton, Soybeans, and Corn by Colorimetric Means as an Inexpensive Method of Crop Monitoring

William Hurdle Welch, 18, Senior; Katherine Lynne Welch, 17, Senior, Alpena High School,
Alpena, Arkansas, T: Mark Bond Welch

Hot Springs, *USAR07, West Central Regional Science fair*

BI006 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, USA06, 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**
Miribel 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

- MI062** **Transcription Factors that Regulate Antimicrobial Resistance in *Candida glabrata***
Elan Eng Filler, 15, Sophomore, Palos Verdes High School, Palos Verdes High School, California, T: Michael Scheerle
Palos Verdes Peninsula, USCA10, Palos Verdes Peninsula Unified School District Science and Engineering Fair
- CH020** **Building a Library of Difluoro- and Trifluoro- Artemisinins, Year Two**
Shreya Sundaresh Ramayya, 16, Junior, Palos Verdes Peninsula, Rolling Hills Estates, California, T: Peter Starodub
- ME043** **Development of an Electroencephalography (EEG) Device for Evaluation of Mild Traumatic Brain Injury, Year Two**
Braeden Christopher Benedict, 17, Junior, Palos Verdes Peninsula, Rolling Hills Estates, California, T: Peter Starodub
Pleasanton, USCA09, Lawrence Livermore National Laboratory – Alameda County Science and Engineering Fair
- CS054** **An Enhanced Method for Fusing Multiple Exposure Images for High Dynamic Range Scenes**
Jihyeon (Janel) Lee, 16, Junior, Amador Valley High School, Pleasanton, California, T: Heather Pereira
- EN062** **A Novel Energy Harvesting System with a Piezo Element to Power a Visual Prosthesis**
Kumaran V.K. Ratnam, 15, Freshman, Dublin High School, Dublin, California, T: Janet Kaehms
- ME074** **Progressing Targeted Cancer Therapy and Diagnosis: Analyzing the Role of MiRNA Target Interactions and Expression Signatures for Glioblastoma Progression**
Vaishnavi Shrivastava, 16, Junior, Mission San Jose High School, Fremont, California, T: Arshiya Sultana
- PH052** **Achieving Net Gain Nuclear Fusion in Microcapsules by Coupling Sonoluminescence and Magnetic Compression**
Raghu Vamsi Dhara, 18, Senior, Mission San Jose High School, Fremont, California, T: David Lau
Sacramento, USCA04, Sacramento Regional Science and Engineering Fair
- MA038** **An Investigation of the p53 Ubiquitin-Proteasome System Using a Novel Non-Steady-State Enzyme Kinetic Model**
Prem Murali Talwai, 16, Junior, Mira Loma High School, Sacramento, California, T: Tim Thayer
- ME116** **Hepatocyte Differentiation of hESC Cultured Under Xeno-Free and Feeder-Free Conditions**
Dhruva Biswas, 17, Senior, Mira Loma High School, Sacramento, California, T: Dean Karagianes
- PH059** **The Relationship between Air Properties and the Deflection Experienced by an Electric Arc, Year Two**
Isfar Syed Munir, 18, Senior, Tracy Joint Union High School, Tracy, California, T: Dean Reese
San Bernardino, USCA13, Riverside, Inyo, Mono, San Bernardino (RIMS) Science and Engineering Fair
- EN066** **Magnetic Field Modulation for Assembly and Manipulation of Responsive Nanoscale Optical Systems**
Michael Janner, 18, Senior, Redlands East Valley High School, Redlands, California, T: Colleen Duncan
- ET062** **Cones, Chutes, and Coils: Novel Proposals to Ebb Wingtip Vortices**
Loren J. Newton, 16, Senior, La Sierra High School, Riverside, California, T: Rob Newton
- MA052** **On the Theory of Lures with Dynamical Action on Compact Topological Manifolds and Ordinary Hyperreal Fractal Strings**
Jared Anthony Tramontano, 15, Sophomore, Centennial High School, Corona, California, T: Michael Maroun
- PH076** **Time-Resolved Spin Lifetime Measurement of Surface States on the Topological Insulator Bi₂Se₃**
Connor Everett Tom, 16, Junior, John W. North High School, Riverside, California, T: Michele Lieux
- PS043** **An Eco-friendly RNA Interference-based Insect Control for Management of Citrus Greening Disease using a Model System**
Saumya R. Keremane, 16, Junior, Martin Luther King, Jr. High School, Riverside, California, T: Kristine Jennings

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 (rSNPs) Impacting Disease**
Natalie Ng, 18, Senior, Monta Vista High School, Cupertino, California, T: Joe Kim
- CB059 Factomics: A Cloud Application Facilitating Disease Causation Analysis Incorporating Adaptive Algorithms, Integrative Genomics, Configurable Gene Expression Sets and Genome-wide Association Studies (GWAS)**
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

- ME315 Rational Discovery and Optimization of Synergistic Chemotherapy Combinations: A Novel Framework Integrating Gene Perturbation Analysis and Machine Learning Algorithms**
 # 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
- PS023 Molecular Characterization of Wild Beet in the Imperial Valley's Commercial Sugar Beet Fields**
 # Kapil Sinha, 14, Sophomore, Salinas High School, Salinas, California, T: Tyler Gerould
- 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**
 ## Tayler 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 Spendier

- 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
- 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 Mohdreza, 18, Senior, Union Colony Preparatory School, Greeley, Colorado, T: Cathy Hoyt
- 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 (*Tursiops 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
Marcelle 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 terebinthifolius*) 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 Gehndy

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
- ME044** Is There Gliosis in the Autistic Brain?, Year Two
Isabel Maria Torres, 16, Sophomore, 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

- 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
- PS003 Use of Surfactant to Enhance Use-Efficiency of Nutrients by Foliar Application**
Stephanie Buraga Fisher, 17, Senior, Saint Lucie West Centennial High School, Port Saint Lucie, Florida, T: Connie McCraw
Fort Walton Beach, USFL07, Panhandle Regional Science and Engineering Fair
- 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
Ft Lauderdale, USFL09, Broward County Science 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 Joykuttty
- 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 Gordinier
- 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

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. Bulter

Jacksonville, USFL10, Northeast Florida Regional Science and Engineering Fair

- AS037 The Effect of Environmental 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* DH5 α 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

- 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
Melbourne, USFL13, South Brevard Science and Engineering Fair
- BI007 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 Nanoparticles**
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
Merritt Island, USFL14, Brevard Intracoastal Regional Science and Engineering Fair
- CB004 Overcoming Resistance**
Yasmine 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
Merritt Island, USFL28, Brevard Mainland Regional Science and Engineering Fair
- BI053 Alleviating Atrophy**
Christian Strock, 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
Miami, USFL15, South Florida Science and Engineering Fair
- AS038 Unintended Consequences of Mosquito Pesticides on the Marine Environment: Potential Effects on the Threatened Staghorn Coral, *Acropora cervicornis***
Chandler Ilsa Precht, 15, Senior, Westminster Christian School, Palmetto Bay, Florida, T: Lisa Garrido
- BE001 The Effect of the Area of Visible Sclera on a Person's Perception of Another Person's Trustworthiness**
Kevin Alexander Rodriguez, 15, Sophomore, Westminster Christian School, Palmetto Bay, Florida, T: Lisa Garrido
- EE002 Two Transistor Ternary Random Access Memory**
Simon Peter Tsoussis, 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: Nicole Justice

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, Pensacola, 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 Moosavifazel

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 β -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 Elshans, 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 PPAR γ and LXR α**
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 H₂O₂ No: Pharmaceuticals Contaminate Groundwater! Sulfamethazine Adsorption Isotherms and Kinetics with Hypercrosslinked Polymer MN250 in Acid and Alkaline Environments**
Maria Elena Grimmer, 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
- BI035 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

Jovanay 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

Chelse-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

BI043 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 Accessions Using Intergeneric Transferable Microsatellite 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 Kavalactones 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 & Engineering Fair

- CB008** **Biochemical Analysis of Post Translation Modification to the Parkinson's Disease Protein Alpha-Synuclein**
 Cherrysse 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

- EE088** **Thermal Energy Storage: The Efficiency of Latent Heat Energy Storage Using Phase 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

DeKalb, 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
- 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
- EA008 Tsunami Mitigation as a Function of Alterations in Bottom Friction**
Naomi Benson, 17, Junior, Deerfield High School, Deerfield, Illinois, T: Judi Luepke
- 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
- BI031 The Effect of Surface Temperature on Chemiluminescence**
Kassie Jean Henry, 17, Senior, Southeastern High School, Augusta, Illinois, T: Sara Jane Ramsey
- EN042 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
- INDIANA**
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
- 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 Khanolkar, 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: Alicia Schiller

- MI050 Isolation of *Escherichia coli* O157 Proteins that Interact with the Bovine Recto-anal Junction Squamous Epithelial (RSE) Cells**

Aparna Sai Ajarapu, 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

Baton Rouge, USLA50, Louisiana Science and Engineering Fair

CB036 VEGF-3 Antibody Functionalized Gold Nanoshells for Near Infrared Photothermal Ablation of Lymphatic Endothelial Cells

Morni A. Modi, 16, Junior, Caddo Parish Magnet High School, Shreveport, Louisiana,
T: Kris Clements

CS052 Differential Evolution and Homes for Hubs

Chi Lan Cao, 14, Freshman, Baton Rouge Magnet High School, Baton Rouge, Louisiana,
T: Tiffany B. Moore

EM319 A Greener Shade of Grey: The Effects of Fly Ash in Concrete, a Second Year Study

Marygrace Summers Duggar, 17, Junior; Olivia Jane Guidry, 16, Junior, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

MI046 The Effects of Various Inhibitors on the Dermatophyte, *Trichophyton rubrum*

Aniko Alicia Nowakowski, 16, Sophomore, St. Joseph's Academy, Baton Rouge, Louisiana,
T: Linda K. Messina

PS031 Amelioration of Hypoxic Coastal Shorelines Using the Physiological Adaptations of *Spartina* Grasses, Elucidated by Pick's Theorem

Natalie Marie Bush, 15, Sophomore, Saint Joseph's Academy, Baton Rouge, Louisiana,
T: Linda Messina

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

CS005 SNAP: A Novel Algorithm for Fast Global Sequence Alignment and Database Search

Venkatesh S. Sivaraman, 15, Sophomore, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements

EE014 Optimization of Blade Angle of Attack of a Low Speed Giromill Vertical Axis Wind Turbine

Kyle L. Dockendorf, 17, Junior, Caddo Parish Magnet High School, Shreveport, Louisiana,
T: Kris Clements

PH004 Exit Velocity of a Sphere Falling in Narrow Tubes

Nicholas Alfredo Larsen, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana,
T: Kris Clements

Houma, USLA03, Terrebonne Parish Science Fair

EE072 The Powerful Water

Cullen Michael Domangue, 16, Junior, Terrebonne High School, Houma, Louisiana,
T: Adrianna Adams

ET052 Fuel of the Future

Colby Michael Short, 15, Freshman, H.L. Bourgeois High School, Gray, Louisiana,
T: Jennifer Amedee

Lafayette, USLA04, Louisiana Region VI Science and Engineering Fair

EN005 An Analysis of the Effect of Trihydric Alcohol, Propane 1,2,3-triol (Glycerol), on the Strength and Pliability of Bio-engineered Fabric

Taylor Jade Marks, 15, Sophomore, Catholic High School, New Iberia, Louisiana,
T: Michelle Stelly

ET010 The Effect of Washings and Shelf Life on Biodiesel Efficiency

Katelyn Suzanne Girouard, 16, Junior, Ovey Comeaux High School, Lafayette, Louisiana,
T: Lisa Ranney

MI303 Medicinal Properties of *Ocimum basilicum* and *Azadirachta indica*

Parker Leblanc, 16, Junior; Calvin Walter Griffin, 16, Junior, Ovey Comeaux High School, Lafayette, Louisiana, T: Lisa Ranney

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

ME002 Acne Treatments

Angelle Leger, 16, Junior, Alfred M. Barbe High School, Lake Charles, Louisiana,
T: Darrell McDaniel

PS008 Do Air Root Pruning Pots Accelerate Success in a No-Till Garden?

John Austin Ham, 16, Junior, DeRidder High School, DeRidder, Louisiana, T: Connie Conner

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

AS046 Comparison of the Foraging Habits of Juvenile *Anolis sagrei* and *Anolis carolinensis* Males

Caitlyn Ann Kelly, 17, Senior, Benjamin Franklin High School, New Orleans, Louisiana,
T: Mary Gubala

BE018 Alexithymia and Hemispheric Lateralization of Emotional Valence and Verbal Ability

Helene Lovett, 17, Junior, Lusher Charter School, New Orleans, Louisiana,
T: Gennarina Santorelli

- 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 Dnmt3l: 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: Julita 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: Christal 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 Frankowiak

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

MI026 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

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

MI021 Novel Engineered Oral Vaccine against HIV/AIDS

Jonathan Zou, 15, Sophomore, Boston Latin School, Boston, Massachusetts,
T: Kathleen Bateman

MI022 Development of *in vitro* Multispecies Biofilms with Hydroxyapatite and Artificial Saliva

Terry Gwen Ni, 15, Sophomore, Boston Latin School, Boston, Massachusetts,
T: Kathleen Bateman

Bridgewater, USMA01, 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

Cambridge, USMA50, Massachusetts State Science & Engineering Fair

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

- CB025 Triclosan: The Snail's Achilles' Heel**
Tess Cushing, 17, Senior, Taunton High School, Taunton, Massachusetts,
T: Elizabeth Pawlowski
- CB026 Characterization of Gene Expression in p53 Activated Tumor-Initiating Cells**
Fan Liu, 15, Sophomore, Fontbonne Academy, Milton, Massachusetts, T: Robert Birch
- EE036 Developing a Cost Effective Solar-Powered Surgical Sterilization System**
Maileen Kozak, 16, Junior, Westfield High School, Westfield, Massachusetts, T: Renee Sweeney
- EE039 Teachable Robotic Arm**
Mark Edward Landergan, 17, Junior, Newburyport High School, Newburyport, Massachusetts,
T: Sarah Leadbeater
- ME037 Characteristics of Deleterious Mutations in Tumor Suppressor Genes**
Nathan Han, 15, Freshman, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman
- Fall River, USMA03, Massachusetts Region III Science Fair*
- ET054 The Power Output of Hydroelectric Generator Prototypes**
Emma Louise Fiore, 15, Sophomore, Joseph Case High School, Swansea, Massachusetts,
T: Peter Brock
- ME036 Stiletto Stress: The Effect of Increased Plantar Flexion on the Degree of Pronation and Supination in the Ankle**
Amy Elizabeth Santos, 16, Sophomore, Taunton High School, Taunton, Massachusetts,
T: Elizabeth Pawlowski
- North Adams, USMA04, Massachusetts Region I Science Fair*
- ME032 The Accuracy of Blood Pressure to Determine Lying due to Stress Levels**
Samantha Rose Walter, 15, Sophomore, Taconic High School, Pittsfield, Massachusetts,
T: Cori Scaduto
- Somerville, USMA02, Massachusetts Region IV Science Fair*
- EN030 Endothelial Differentiation of c-kit+ Cardiac Progenitor Cells in Extracellular Matrix-Fibrin Hybrid Hydrogel Scaffolds**
Erica Budina, 18, Senior, Medford High School, Medford, Massachusetts, T: Jodi Driscoll
- Worcester, USMA05, Massachusetts Region II State Science Fair*
- CB020 Engineering a Novel CDH1 Fluorescent Protein Reporter Construct to Evaluate Cancer Cell Differentiation**
Gregory John Konar, 18, Senior, Massachusetts Academy of Math and Science at WPI,
Worcester, Massachusetts, T: Judith Sumner
- CS306 Eye of the Storm**
Jagath Jai Kumar, 15, Sophomore; Paul Amedee Maurais, 17, Senior, Hopedale Junior-Senior High School, Hopedale, Massachusetts, T: Cameron Brown
- MA022 Base 1.5: Analysis of Properties and Relation to the Collatz Conjecture**
Jesse Martin Michel, 17, Junior, Massachusetts Academy of Math and Science at WPI,
Worcester, Massachusetts, T: Regele Thomas
- ME305 The Physiological Effects of Noise Pollution on the Cardiovascular System of *D. melanogaster***
Marcelo Ferrari, 17, Senior; Akanksh Chaudhary, 17, Senior, Bancroft School, Worcester, Massachusetts, T: Mary Ann DeMaria

MICHIGAN*Ann Arbor, USMI01, Southeast Michigan Science Fair*

- CB046 Differential Effects of Food Additives on Catalase and Its Close Interactors**
Shreya Menon, 16, Sophomore, Skyline High School, Ann Arbor, Michigan, T: Casey Warner
- CS068 Optimizing Computing Power in Predicting an Individual's Response to Certain Toxins**
Grace Anne Ganzel, 18, Senior, Huron High School, Ann Arbor, Michigan, T: Inhan Lee
- Berrien Springs, USMI08, Berrien County Regional Science Fair*
- BE315 The Effect of Technology on Teenagers**
Grace Elizabeth Brackman, 14, Freshman; Sydney Corinne Cason, 15, Freshman,
Lakeshore High School, Stevensville, Michigan, T: Lynda Smith
- CB060 Innovative Non-invasive Test for Food Based, Non-IgE-mediated, Allergic Reactions**
Bailey Austin Bakerson, 15, Freshman, Berrien County Mathematics and Science Center,
Berrien Springs, Michigan, T: Denise Smith

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

BI305 **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**

Alexandra 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

EE304 **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 Zygoty (Hemizygotes vs. Homozygotes) on the Fitness and Impact in 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

Mankato, USMN03, Southern Minnesota Regional Science and Engineering Fair

- 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: Princessa VanBuren-Hansen
- PS011 Developing Transgenic Sugar Beet by Agrobacterium-mediated Gene Transfer**
Aditi Das, 17, Senior, Roseville Area High School, Roseville, Minnesota,
T: Princessa VanBuren-Hansen
- PS012 Globally Utilizing Perennial Intermediate Wheatgrass**
Heather Joy Stone, 18, Senior, Mounds View High School, Arden Hills, Minnesota,
T: Tonya 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

- CH307 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 Drimentine 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**
Lucas Arthur Derbyshire, 15, Sophomore, Winona Senior High School, Winona, Minnesota, T: Kenneth James Mann
- 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

Greenville, USMS50, Mississippi Science and Engineering State Fair

EV049 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

ME087 What's in Your Smoothie?

Anna Lauren Carr, 15, Freshman, Starkville Christian School, Starkville, Mississippi,
T: Karen Miller Carr

Hattiesburg, USMS04, University of Southern Mississippi Region I Science and Engineering Fair

ME115 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

MI073 "Fishing Out" Polyketide Synthesis Genes from a "Red Tide"-Forming Dinoflagellate
Courtney Eileen Grinnell, 17, Senior, Petal High School, Petal, Mississippi, T: Krystin Holmes

Jackson, USMS05, Mississippi Region II Science and Engineering Fair

BI040 The Hunt for Wondrous Wolbachia

Nikhil Mohan Arora, 15, Sophomore, St. Andrew's Episcopal School, Ridgeland, Mississippi,
T: Sandra Hindsman

EV044 Protective Effects of Turmeric on Ultraviolet-Radiation Exposed Fruit Flies (*Drosophila melanogaster*)

Raveena Aggarwal, 16, Sophomore, St. Andrew's Episcopal School, Ridgeland, Mississippi,
T: Sandra Hindsman

ME053 The Role of TNF-alpha in the Progression of Diabetic Nephropathy

Alyssa P. Pennington, 18, Senior, Murrah High School, Jackson, Mississippi, T: Jeffrey Stokes

MI063 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

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

EE087 Wind Turbines for Developing Worlds

Donely Antwan Gunn, 18, Senior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Don Bratton

EV041 Micro and Macro Invertebrates: What's Crawling in the Water?

Tyhendreon Wilson, 15, Sophomore, Noxubee County High School, Macon, Mississippi,
T: Lillie Bryant

Oxford, USMS07, Mississippi Region VII Science and Engineering Fair

ET041 Hydro-Power

John Tyler Bass, 14, Freshman, Oxford High School, Oxford, Mississippi, T: Sarah Robinson

MA025 Identification of the Impact of Obesity Treatments on Gene Expression using a Novel Statistical Test

Shreya Mathur, 17, Senior, Oxford High School, Oxford, Mississippi, T: Sarah Robinson

MISSOURI

Cape Girardeau, USMO01, Southeast Missouri Regional Science Fair

MI048 The Effectiveness of Antibiotics

Austin A Van De Ven, 15, Freshman, Notre Dame Regional High School, Cape Girardeau, Missouri, T: Rob Huff

MI058 Using *Aliivibrio fischeri* to Detect Water Toxins

Jon Samuel Rodgers, 15, Sophomore, Dexter Senior High School, Dexter, Missouri,
T: Tiska Rodgers

Fayette, USMO10, Central Methodist Eagles Science and Engineering Fair

AS014 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

MA014 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

Jamielee 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

Ashwath Kumar, 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

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 *dbdt* 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

Ryan Dahl, 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 Alysse Dennis, 16, Junior, Mansfield High School, Mansfield, Missouri, T: Pam Probert

EM043 Enhancing Nutrient Values of *Gryllobates sigillatus* for Future Food Sustainability

Chase Evan Herman, 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 *Atgle1* 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 Mallory

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

EV303 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 Hervet

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

Ohyoan 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 Dirito, 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

Deshna Larrensens 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 *Panicum 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: Marla 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

Luke Matthew Farrell, 16, Junior; Sarah Alyse Jacobs, 17, Junior, Hauppauge High School, Hauppauge, New York, T: Jocelyn Pendleton

- 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**
Lelina 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: Brigitte 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; Ying 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

- 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 Species (ROS) in TGF- β 1 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 α -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
- ET053 Using Intelligent Autonomous Holonomic Landing Gear in Crosswind Landings to Advance Aviation Safety**
Walter Emerson Czerwinski Burkard, 17, Junior, Manlius Pebble Hill School, Dewitt, New York, T: Susan 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

- ET036 Inflation Airplane Design and Optimization for Low Reynolds Numbers**
Scott Alexander Boltz, 16, Sophomore, Potsdam High School, Potsdam, New York, T: Pier Marzocca
- PH067 Photodynamic Therapy Induced Microvascular Changes Assessed by Photoacoustic Microscopy**
Hakeem Mohamed Salem, 15, Sophomore, City Honors School at FMP, Buffalo, New York, T: Kelly Hyla
- Troy, USNY07, Greater Capital Region Science and Engineering Fair, Inc.*
- CB028 Proteasome-Directed Camelid Nanobodies Promote the Degradation of α -Synuclein as a Potential Parkinson's Disease Therapeutic**
Ankit Singh Baghel, 17, Junior, The Albany Academies, Albany, New York, T: David Buran
- CS038 Come Code with Codester: A Novel Educational App that Teaches Computer Science**
Gili Rusak, 17, Junior, Shaker High School, Latham, New York, T: Jodie Kimbrough
- EE033 Using a Double Droplet System to Create a Fast-Focusing Liquid Lens**
John L. Dean, 16, Junior, Scotia Glenville High School, Scotia, New York, T: Chris Judd
- Utica, USNY08, Utica College Regional Science Fair*
- PH025 Flow Rate vs. Magnetic Field**
Suveer S. Desai, 17, Junior, New Hartford Senior High School, New Hartford, New York, T: Anthony Surace
- Westchester, USNY05, Regeneron-Westchester Science and Engineering Fair*
- BE309 Psychosocial Variables Affecting Breast Cancer Patient Quality of Life**
Alyson Winter, 17, Senior; Abigail E. Kamen, 17, Senior, Ossining High School, Ossining, New York, T: Valerie Holmes
- BI024 The MAPT H1 Haplotype Is Associated with an Increased Clinical and Neuropathological Severity of Chronic Traumatic Encephalopathy**
Adam Z. Illowsky, 17, Senior, Ossining High School, Ossining, New York, T: Valerie Holmes
- BI026 Evidence of Toll-like Receptor Nine-Mediated Amelioration of Amyloid Pathology in a TgSwDI Mouse Model of Alzheimer's Disease**
Charlotte Sophia Herber, 17, Senior, Fox Lane High School, Bedford, New York, T: Stephanie Peborde
- BI037 Structural Snapshots of *K. lactis* Purine Nucleoside Phosphorylase Trapped with Transition State Analog Inhibitors**
Samuel Arturo Goldman, 16, Junior, Pelham Memorial High School, Pelham, New York, T: Steven Beltecas
- CB029 Generating iPSCs from Human Adipocytes for Differentiation into Nociceptive Neurons**
Elizabeth Boyle Sobolik, 16, Junior, Sleepy Hollow High School, Sleepy Hollow, New York, T: Janet Longo-Abinanti
- CS037 Development of a Novel Machine Learning Algorithm to Monitor Vascular Tissue Transfers Using Speech Recognition Techniques**
Ariel Benjamin Kanevsky, 16, Junior, Ossining High School, Ossining, New York, T: Valerie Holmes
- CS062 Predicting Cancer Drug Response Using Nuclear Norm Multi-Task Learning**
Ivan Paskov, 18, Senior, Edgemont High School, Scarsdale, New York, T: Maria DeCandia
- EA010 An Optimized Analysis of Wind Flows in the Urban Environment and the Identification of Feasible Building Augmented Wind Turbine Sites**
Ben Ross, 17, Senior, Ossining High School, Ossining, New York, T: Valerie Holmes
- EE329 Compressed Air Energy Storage**
Erik Rapheal Santini, 18, Senior; Matthew Wrubel, 19, Senior, Yorktown High School, Yorktown Heights, New York, T: Michael Blueglass
- ME084 An Exploratory Investigation of microRNA Regulation of ACSL4 in Androgen Deprivation Therapy Resistant Prostate Cancer**
Xinxin Du, 18, Senior, Scarsdale High School, Scarsdale, New York, T: Beth Schoenbrun
- ME092 Loss of TDP43 in Motor Neurons Leads to Deficits in Axonal RNAs in an Animal Model of ALS**
Karan Desai, 17, Senior, Edgemont High School, Scarsdale, New York, T: Maria DeCandia
- MI052 Constructing an HBV Reporter Virus**
Alexander F. Kaufman, 18, Senior, Horace Greeley High School, Chappaqua, New York, T: Trudy Gessler

- 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 Baslous, 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 Wiest

EM037 Emission Reduction Using an Activated Carbon Supplement

Tyler Gordon Toepke-Floyd, 18, Senior, Wishek High School, Wishek, North Dakota,
 T: Joshua Wiest

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 Paitetta, 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

Bluyé 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 Niranjana 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

- BI011 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 Sheltis, 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

Muskogee, 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, Muskogee High School, Muskogee, 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

Hillsboro, *USOR04, Beaverton-Hillsboro Science Expo*

BI010 PNA for Use in Small-Molecule Libraries Derived by Combinatorial Solid-Phase Synthesis: Reaction Optimization

Richik Neogi, 17, Senior, Merlo Station School of Science and Technology, Beaverton, Oregon, T: Bernadette Buxton

CH009 Synthesis of Aspirin and the Importance of the Strength of the Acid Catalyst

Ryann Nicole Fadden, 18, Senior, Century High School, Hillsboro, Oregon, T: Miles Hudson

CS013 An Iterative Model for Developing Network-on-Chip (NoC) Architectures

Anusha Pai, 16, Junior, Westview High School, Portland, Oregon, T: Debbie Cooper

PH011 Frequency Modulation Feedback Control for Near-Field Acoustic Characterization of Mesoscopic Fluid Films

Pramith Sai Devulapalli, 17, Junior, Westview High School, Portland, Oregon, T: Debbie Cooper

Portland, *USOR02, Portland Public Schools Science Expo*

EE053 Implementation and Evaluation of a New Routing Algorithm for Networks on Chip

Lukas Gernot Schwab, 16, Junior, Lincoln High School, Portland, Oregon, T: Meg Kilmer

EV036 Monitoring Ocean Microscopic Organic Material: Assessing Large-Scale Ecological Disruption on Annual Chl-a, POC, and PIC Fluctuation Equilibrium

Jinsong (Tony) Yan, 17, Senior, Cleveland High School, Portland, Oregon, T: Matthew Staab

MA029 Development and Comparative Analysis of Machine Learning Algorithms for Breast Cancer Detection

Clemen Deng, 16, Sophomore, Lincoln High School, Portland, Oregon, T: Yuchen Huang

Portland, *USOR05, Aardvark Science Exposition*

BE304 Capacity Limits of Working Memory: The Impact of Multitasking on Cognitive Control and Emotion Recognition in the Adolescent Mind

Alexandra Ulmer, 17, Junior; Sarayu Caulfield, 16, Junior, Oregon Episcopal School, Portland, Oregon, T: Peter Langley

EN011 The Fabrication and Characterization of Short and Long Term Memory Proton Induced Thin Film Synaptic Transistors

Harsha Sudarsan Uppili, 17, Senior, Oregon Episcopal School, Portland, Oregon, T: Peter Langley

ET016 From Waste to Electricity and Hydrogen Gas: A Novel Power Management Device for Microbial Fuel Cell-Microbial Electrolysis Cell Coupled Systems

Ajay Krishnan, 18, Senior, Oregon Episcopal School, Portland, Oregon, T: Catherine Molloseau

MA008 Hybridized Characteristic 3 Galois Field Arithmetic for Elliptic Curve Cryptography, Phase III

Vinay Sridhar Iyengar, 18, Senior, Oregon Episcopal School, Portland, Oregon, T: Bevin Colleen Daglen

Portland, *USOR50, Intel Northwest Science Expo*

CH042 Novel Synthesis and Characterization of Antimony and Lithium Doped Tin Dioxide Nanocrystals Achieving Record Gas Sensor Performance

Nikhil Murthy, 14, Freshman, Catlin Gabel School, Portland, Oregon, T: Veronica Ledoux

EE074 Generalized Decision Functions for Synthesis of Multi-level Logic Circuits Realized by Memristor ImPLY Gates

Anika Raghuvanshi, 16, Junior, Jesuit High School, Portland, Oregon, T: Jennifer Cournia

EM038 The Efficiency of Ferromagnetic Nanoparticles and Chlorella Algae in the Remediation of Oil Spills

Sahil Veeramoney, 14, Freshman, Oregon Episcopal School, Portland, Oregon, T: Catherine Molloseau

EN054 A New Methodology for Laser Reduced Graphene as a Catalyst on the Counter Electrode of Dye Sensitized Solar Cells

Meredith Anne Loy, 17, Junior, Oregon Episcopal School, Portland, Oregon, T: Peter Langley

ME098 Alzheimer's Disease Distribution in the Northwest in Relation to Microclimates, A Second Year Epidemiological Study

Talia Alysse Lichtenberg, 16, Sophomore, West Linn High School, West Linn, Oregon, T: Amy Schauer

MI064 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*

Nicholas Paul Miller, 17, Junior, West Linn High School, West Linn, Oregon, T: Amy Schauer

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 Lymphangi leiomyomatosis: 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 Feistritz, 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

Beaufort, USSC02, Sea Island Regional Science Fair

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

Charleston, USSC03, Low Country Science Fair

MI074 The Antibacterial Agent Triclosan as a Growth Inhibitor of *Staphylococcus aureus* and *Staphylococcus epidermidis*

Irene Gayi Cheng, 17, Senior, Academic Magnet High School, North Charleston, South Carolina, T: John Sully Johnston

Columbia, USSC04, USC Central South Carolina Region II Science and Engineering Fair

AS031 Effects of Genetically Engineered Maize and Glyphosate on *Eisenia fetida* Growth and Reproduction

Brett Douglas Winters, 16, Junior, Dutch Fork High School, Irmo, South Carolina, T: Elizabeth McShane

MA041 On the Number of Linear Extensions of Graphs

Annie Hu, 16, Senior, Lexington High School, Lexington, South Carolina, T: Benjamin Iriarte

Spartanburg, USSC07, Piedmont South Carolina Region III Science Fair

EN306 Does your Dollar Go Farther in Golf?

Peyton Allen Dunn, 15, Sophomore; Parker Malone, 15, Sophomore, James F. Byrnes High School, Duncan, South Carolina, T: Patricia White

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: Sandra 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

PS027 Evaluating the Effectiveness of Anthocyanins as Sunscreen, Phase Two

Julie Anne Boyle, 18, Senior, Avon High School, Avon, South Dakota, T: Paul Kuhlman

PS314 Organic Preventative Measures against the Germination of Musk Thistles

Amanda Mae Reiff, 17, Junior; Devin William Tolsma, 18, Junior, Avon High School, Avon, South Dakota, T: Paul Kuhlman

Rapid City, USSD03, High Plains Regional Science and Engineering Fair

MI042 Microevolution of *Bacillus subtilis* in Response to Isopropanol Alcohol Stress

Jackson Peterson, 17, Junior, Sturgis Brown High School, Sturgis, South Dakota, T: Kristin Wheaton

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 Xylem Filter

Shailey Shah, 14, Freshman, Chattanooga School for the Arts and Sciences, Chattanooga, Tennessee, T: Kelly Davis

Clarksville, USTN06, Middle Tennessee 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 Benzoquinone 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

Kinsey 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 Clevenson, 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**
 # Advait 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 Rochefort
- 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
- PS005 Electromagnetic Seed Germination**
Victor Solis, 18, Senior, Americas High School, El Paso, Texas, T: Liliana Ramirez
- Fort Worth, USTX03, Fort Worth Regional Science and Engineering Fair*
- CH010 Stay Home or Go Global: Local versus Imported Fruit**
Liesel 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
- PH012 Eddy Current Optimization of Thermal Deposited Silver Film for Nuclear Microprobe Applications**
Alexander Lu, 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
- BI020 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 Villareal
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: Alicea 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: Alicea Chaloupka
Odessa, USTX09, Permian Basin Regional Science Fair
- EM001 Reclaiming the Desert**
Ethan Trotter, 18, Senior, Andrews High School, Andrews, Texas, T: Cindy Tochtermann
- EN002 What Is Vortex Shedding? "The Answer, My Friend, Is Blowing in the Wind"**
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 ER β 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
- Waco, USTX12, Central Texas Science and Engineering Fair*
- BI021 Will Combined BTK Inhibitors Decrease Growth of Multiple Myeloma Cancer Cells?**
Lauren Mirelle Strickland, 16, Junior, San Angelo Central High School, San Angelo, Texas, T: Justin Hollway
- ME012 Interfering with Glioblastoma Multiforme (GBM) Metabolism to Complement the Therapeutic Effects of Temozolomide**
Darin Garrett, 18, Senior, Harker Heights High School, Harker Heights, Texas, T: Joyce Smith
- UTAH**
Cedar City, USUT02, 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
- ET031 Rain Gain**
Samantha Olsen, 16, Junior, Manti High School, Manti, Utah, T: Jared Eliason
- Layton, USUT01, North Davis Area Science and Engineering Fair*
- AS019 Optimal Equine Balance: Application of Biophysics to Assess and Reduce Equine Injury, Phase II**
Erika Nicole Mueller, 16, Junior, Clearfield High School, Clearfield, Utah, T: Bruce Staley
- ET307 Prolonging Battery Life through Application of the Seebeck Effect**
Parker Logan Murray, 16, Junior; Davis Johnson, 17, Junior, Woods Cross High School, Woods Cross, Utah, T: Janette Duffin, Janet Duffin
- EV029 Sustainable Water Purification System with UV Irradiation**
Hans Christian Pande, 17, Junior, Woods Cross High School, Woods Cross, Utah, T: Janette Duffin
- EV030 The Impact of Estradiol on *Artemia franciscana***
Robert Paul Baskin, 17, Senior, Bountiful High School, Bountiful, Utah, T: Austin Walker
- EV031 Has Methicillin-Resistant *Staphylococcus aureus* (MRSA) Escaped Public Health Facilities and Is the General Population at Risk?**
Kincade Leo Stevenson, 14, Freshman, Davis High School, Kaysville, Utah, T: Douglas Sill
- PH031 Violating the Spin Barrier**
Kelsey MacKenna Barber, 14, Freshman, Bountiful High School, Bountiful, Utah, T: Jenni Barber
- Logan, USUT06, 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. Ritchey 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**
Abigail Millard, 16, Junior, Windsor High School, Windsor, Vermont, T: Catharine Engwall

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 Thirukkurugudi
- 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 Poniatowski, 16, Sophomore, Hayfield Secondary School, Alexandria, Virginia, T: Sara Hubbard
- 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 Nambiar
- 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*
- BI017 The Effects of Active Site Mutation in *Anopheles gambiae* Transglutaminase 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 Gelatins: 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

- EM019 Cadmium Ion Removal from an Aqueous Solution by Dried Water Hyacinth Biomass-Kinetic Studies: Effect of pH, Time, Hyacinth Dosage, and Cadmium Concentration on Adsorption**

Rohan Mathew, 17, Junior, Mills E. Godwin High School, Richmond, Virginia, T: Thomas Gallo

- ME099 The Effect of Nerve Growth Factor on the Cardiac Regeneration of Zebrafish**

Nayla Labban, 17, Junior, Mills E. Godwin High School, Richmond, Virginia, T: Thomas Gallo

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

- PH027 The Effect of a Magnetic Field on the Solubility of Various Compounds**

Warner McGhee, 15, Sophomore, Roanoke Valley Governor's School for Science and Technology, Roanoke, Virginia, T: Steve Smith

Warrenton, USVA12, Fauquier County Regional Science & Engineering Fair

- AS030 The Efficacy of MSG as Positive Reinforcement in *D. melanogaster* Learning**

Hannah Small, 18, Senior, Kettle Run High School, Warrenton, Virginia, T: Dee Thompson

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**

Naveena 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**
- #** Meghal 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, USWI01, 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**
 Jarely 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**
 Lia Grace Strauss Eggleston, 13, Sophomore, Home School, Laramie, Wyoming, T: Sarah Strauss

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 Pérez, 18, Senior; Andrea Aldaz, 18, Freshman; Andrea De Leon, 18, Freshman, Schools: Escuela Técnica 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; Claudio Fabian Lacuesta, 16, Junior, Schools: Liceo No. 17, Montevideo, Uruguay, T: Patricia Soledad Píriz

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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1:00pm – 2:00pm – Intel Science
Talent Search Application Season
Kickstart, Rm. 406 AB
(Finalist Resource Center)

4:15pm – 5:15pm – Intel Science
Talent Search Rules and Judging
Overview, Rm. 409 AB

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