



# THINK BEYOND

**Intel International Science and Engineering Fair  
2017 Program**

May 14–19, 2017  
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 1,750 high school students from more than 75 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 nearly \$4 million in prizes and scholarships annually.

# Intel International Science and Engineering Fair 2017

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**Intel Corporation**  
Rosalind Hudnell  
President, Intel Foundation  
Vice President of Corporate Affairs  
Intel Corporation

Dear Intel ISEF Finalist, Educator, Families, and Fair Directors, and Special Guests:

Congratulations! We are pleased and excited to have you here for the 2017 Intel International Science and Engineering Fair (Intel ISEF) in Los Angeles. You have traveled far and wide for this amazing experience and we hope your time here allows you to explore your curiosity, creativity, and imagination.

We encourage you to meet new friends, interact with panelists, explore the great work of others, and embrace the spirit of this year's theme to "THINK BEYOND" in the following three ways:

**BEYOND BARRIERS:** You will meet people from many countries and cultures during this action-packed week. Take this opportunity to look beyond your differences of language or appearance and find what brings you together. Whether you're a fair director from Peru, or a finalist from Kenya, you can build relationships and foster community that will enrich your perspective.

**BEYOND YOURSELF:** When you consider the finalists, judges, panelists, Nobel Laureates, and others walking the halls, there is no greater collection of brainpower in one place than Intel ISEF! Please take advantage of this chance to listen and learn beyond your current focus areas. Remember, innovation doesn't happen in a vacuum.

**BEYOND DOUBT:** Our world faces fundamental challenges, and it's important to remember that the status quo defines only what hasn't been discovered yet. The ideas that the Intel ISEF community will bring into existence through hard work and collaboration will fundamentally change the world in ways that are impossible to imagine today. Think deeply about what impact your work can have on the planet, or just a single person. Believe in yourself.

Furthermore, I want to express my gratitude to you for helping to create this enriching experience, and to the many dedicated families, supporters, and volunteers who make the event possible.

After 2017 Intel ISEF comes to close, and you continue your journey to reshape and better the world, remember the great words of Robert Noyce, "Don't be encumbered by history. Go off and do something wonderful."

Welcome to 2017 Intel ISEF,

A handwritten signature in black ink that reads "Rosalind L. Hudnell".

Rosalind Hudnell  
President, Intel Foundation  
Vice President of Corporate Affairs  
Intel Corporation

# Society for Science & the Public

Maya Ajmera  
President & CEO  
Publisher, *Science News*



Welcome from the Society for Science & the Public

Welcome to the Intel International Science and Engineering Fair 2017!

Congratulations on being selected to compete at Intel ISEF! Tens of millions of students compete in science fairs every year around the globe, with only about 1,700 students invited to join us as a finalist. You are truly among an elite group. While you are here, I encourage you to take advantage of everything that Intel ISEF has to offer, including connecting with your fellow finalists. Many Intel ISEF alumni stay in touch with one another, developing not only lifelong friendships, but also collaborating professionally later in life.

I also look forward to meeting you—the top young innovators from around the world—to hear more about your ideas and research. When I was a high school student, I too participated in science fairs—I understand the hard work and sweat equity that has gone into each and every project on display here this week.

I think it's extraordinarily exciting to think about the fact that the projects being judged here this week seek to take on and solve some of our world's greatest challenges. You are tomorrow's problem solvers, the stewards of our future. And, of course, nearly \$4 million in awards is up for grabs!

Please enjoy this week and celebrate your accomplishments. I also encourage you to thank the people who helped you get here—your teachers, parents and mentors who supported you through the years. It takes a true community to develop talent like yours!

The Society for Science & the Public would like to thank Intel for their sponsorship, the many additional organizations that have provided support and awards, the volunteers from Los Angeles and throughout the country who make this event possible, as well as the people who work so diligently to organize science fairs around the world.

I hope all of you have a wonderful time at Intel ISEF 2017!

Sincerely,

A handwritten signature in black ink that reads "Maya Ajmera". The signature is written in a cursive, flowing style.

Maya Ajmera  
President & CEO  
Society for Science & the Public  
Publisher, *Science News*



**State of California**  
Jerry Brown  
Governor



OFFICE OF THE GOVERNOR

May 15, 2017

***Intel International Science and Engineering Fair***

Welcome to the 2017 Intel International Science and Engineering Fair.

To all the participants, I commend your dedication to science, engineering and discovery by participating in this prestigious event. Innovative thinkers are crucial to the economic development and scientific progress of all nations and are the future leaders of tomorrow.

I applaud everyone who had a hand in making this event possible – the parents, teachers, mentors, judges, volunteers and support staff. Your knowledge and encouragement give these talented students an opportunity to continue the legacy of scientific accomplishment in the Golden State.

On behalf of the State of California, I wish the very best for an unforgettable competition and hope you enjoy your stay in Los Angeles.

Sincerely,

  
EDMUND G. BROWN JR.

**City of Los Angeles**  
Eric Garcetti  
Mayor



Welcome from the Mayor of Los Angeles

May, 2017

Dear Friends:

On behalf of the City of Los Angeles, welcome to the 2017 Intel International Science and Engineering Fair (Intel ISEF).

Los Angeles is proud to host this gathering of young leaders in science and engineering, as part of the world's largest pre-college science competition. Los Angeles has always attracted dreamers—people with the vision and drive to create something new, to make us see that more is possible, and to show us the way to build a more prosperous and equitable society.

Innovation is at the heart of Los Angeles. From film to aerospace and information technology as well as the biological sciences, Angelenos have always built the future. Angelenos are charting a new course for space exploration, creating new ways to use technology to communicate and tell stories, and are making critical contributions in tech, health sciences and many other fields.

Diversity, inclusion and equity are at the core of what Los Angeles stands for. The pulse of our city and the heart of our culture beats in 224 languages. Diversity powers innovation because science does not have a nationality and genius is born in every corner of the world.

I want to congratulate each and every student whose work has brought them here today, and I want to challenge each of you to continue your work, and to never quit dreaming.

With warm regards.

Sincerely,

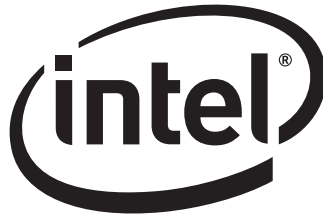
A handwritten signature in black ink, appearing to read "E. Garcetti". The signature is stylized and includes a flourish at the end.

ERIC GARCETTI  
Mayor

Society for Science & the Public  
acknowledges with gratitude

**Intel Corporation**  
and  
**Intel Foundation**

for their support of the Intel ISEF 2017.



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 75 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.





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 Gordon E. Moore Award, as well as a prize of \$75,000, to the Intel International Science and Engineering Fair 2017 winner.

## 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 and casinos.

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.

**By entering the Intel International Science and Engineering Fair 2017 (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 the Society.**

# THINK BEYOND



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 nonprofits 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: [intel.com/ISEF](http://intel.com/ISEF)



As a result of their excellent performance at an Intel ISEF-affiliated fair at a local, regional or national level this year, more than 1,750 students earned finalist status at the Intel ISEF 2017 in Los Angeles.

Finalists will compete for nearly \$4 million in awards and prizes, will be judged on their creative ability and scientific thought, as well as the thoroughness, skill and clarity shown in their projects.

## **2017 Grand Awards include:**

### **Gordon E. Moore Award**

Intel and Society for Science & the Public are pleased to present an award of \$75,000 to the top Best of 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.

### **Intel Foundation Young Scientist Award**

Intel and Society for Science & the Public will present \$50,000 to two Best of 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.

### **Intel Foundation Cultural and Scientific Visit to China Award**

The Intel Foundation is partnering with China Adolescents for Science and Technology (CAST) to award a trip to the Chinese cities of Beijing, Chengdu and Hong Kong. Winners will attend the CAST Innovation Contest, the largest national science competition in China, and have the opportunity to visit the Chengdu Panda Research base as well as other science education institutes, research centers, middle schools and universities in China. Winners will exchange ideas with Chinese scientists and like-minded peers.

### **Dudley R. Herschbach SIYSS Award**

Three finalists will win an all-expenses paid trip to attend the Stockholm International Youth Science Seminar (SIYSS), which includes attendance at the Nobel Prize ceremonies, in Stockholm, Sweden. 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.

### **Intel and Indo - U.S. Science & Technology Forum Visit to India Award**

In partnership with the Indo - U.S. Science and Technology Forum, Intel is pleased to award a scientific and cultural exchange visit to India. Winners will showcase their research projects at the National Fair of India – Initiative in Research and Innovation in Science (IRIS). In addition to participation at IRIS, the students will receive an opportunity to visit research institutions and universities and interact with the key scientific leadership in India.

## **European Union Contest for Young Scientists Award**

An all-expense-paid trip enables attendance at the European Union Contest for Young Scientists to be held in Estonia in 2017.

## **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**

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 Award**

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 Award**

Presented in each of the 22 Intel ISEF categories, Grand Awards are given 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.



Society for Science & the Public and Intel thank the following organizations for their generous support of the Intel ISEF 2017 Education Outreach Day Program to be attended by more than 4,000 local middle and high school students and their teachers.

**The Ralph M. Parsons Foundation**

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**Broadcom Foundation**

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**Arconic Foundation**

**Ashtavadhani Vidwan Ambati Subbaraya Chetty  
Foundation, Inc.**

**The Feng Zhang Fund for STEM Education  
and Outreach**

**GoDaddy**

**Northrop Grumman**

**Western Digital**

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**Burton Family Foundation**

**Gilead Sciences**

**PPG Industries Foundation**

**The Riordan Foundation**

**Southern California Edison**

**Dr. Nelson Ying**

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

# you're the reason science is cool.

GoDaddy is a Proud Sponsor of  
the Intel International Science  
and Engineering Fair.



Intel ISEF 2017 Special Awards Organizations provide education scholarships, cash awards, summer internships, scientific field trips and equipment grants. Intel and Society for Science & the Public thank the following organizations for their support of the Intel ISEF.

Acoustical Society of America  
ADA Foundation  
Air Force Research Laboratory on behalf of the  
United States Air Force  
American Chemical Society  
American Committee for the Weizmann Institute of Science  
American Geosciences Institute  
American Institute of Aeronautics & Astronautics  
American Intellectual Property Law Association  
American Mathematical Society  
American Meteorological Society  
American Physiological Society  
American Psychological Association  
American Statistical Association  
Arconic Foundation  
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  
China Association for Science and Technology (CAST)  
Coalition for Plasma Science (CPS)  
Drexel University  
Drug, Chemical & Associated Technologies Association (DCAT)  
Florida Institute of Technology  
Fondazione Bruno Kessler  
GoDaddy



IEEE Foundation  
Intel Foundation  
International Council on Systems Engineering–INCOSE  
K. Soumyanath Memorial Award  
K. T. Li Foundation Special Award  
King Abdul-Aziz & his Companions Foundation for  
Giftedness and Creativity  
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  
National Security Agency Research Directorate  
Office of Naval Research  
on behalf of the United States Navy and Marine Corps  
Oracle Academy  
Patent and Trademark Office Society  
Qatar Foundation, Research & Development  
REDDS Venture Investment Partners  
Ricoh USA, Inc.  
Samvid Education Foundation  
Sigma Xi, The Scientific Research Society  
Society for Experimental Mechanics, Inc.  
Society of Experimental Test Pilots  
SPIE, the international society for optics and photonics  
U.S. Agency for International Development  
United States Environmental Protection Agency  
United Technologies Corporation  
University of Arizona  
University of the Sciences in Philadelphia  
University of Toronto, Faculty of Applied Science & Engineering  
Wolfram Research, Inc.

All Intel ISEF 2017 events take place at the  
Los Angeles Convention Center  
unless otherwise noted.

Office Hours

<b>Event/Group</b>	<b>Location</b>	<b>Day</b>
Adult Mixer	JW Marriott	5/16
Advisory Council Meeting	408 A	5/14 & 5/18
Alumni Entrepreneur Panel	Halls G/H	5/16
Presented by Society for Science & the Public		
Excellence in Science & Technology Panel	Halls G/H	5/16
Presented by Intel Corporation		
Finalist Project Exhibits	Halls J/K	5/14–5/19
Finalist Resource Center	309	5/14–5/16
Grand Awards Ceremony	Halls G/H	5/19
Housing Information	South Hall Lobby	5/14–5/18
	Registration Complex	
HUB (Center of Exhibit Hall)	Halls J/K	5/14–5/19
IB Testing	402 B	5/15–5/19
Information Desk	South Hall Lobby	5/14–5/19
Intel Quad	South Hall Lobby	5/14–5/18
Intel ISEF Commons 2017	Concourse Hall	5/15–16
Intel ISEF Night at Universal Studios	Universal Studios	5/17
International/Volunteer Office	306 A/B	5/12–5/19
Judges' Registration	South Hall Lobby	5/16
Locator Card Kiosk	South Hall Lobby	5/13–5/19
Lost and Found	HUB	5/14–5/19
	Registration Complex	5/12–5/16
Medals and Certificates	HUB	5/15–5/16
Official Party Registration	South Hall Lobby	5/13–5/19
	Registration Complex	
Opening Dinner	West Hall B	5/15
Opening Ceremony	Halls G/H	5/15
Press Room	301 A/B	5/13–5/19
Public Visitation	Halls J/K	5/18
Registration	South Hall Lobby	5/13/–5/18
	Registration Complex	
Retail Store	Halls J/K Concourse	5/13–5/19
Scientific Review Committee (SRC)	308 A/B	5/14–5/15
Society for Science & the Public	South Hall Lobby	
Information Booth	Registration Complex	5/13–5/19
Society for Science & the Public	Concourse Hall Lobby	5/14–5/18
Lounge		
Special Award Ceremony	Halls G/H	5/18
Student Mixer	Club Novo/Target Terrace/ Grammy Museum	5/16
Student Pin Exchange	JW Marriott	5/14
<i>Finalists/Student Observers Only</i>	Diamond Ballroom	
Symposia	150 A/B/C, 151	5/15–5/18
Tour Desk	South Hall Lobby	5/13–5/19

**Open Daily****Finalist Exhibit Hall and the Hub**

Sunday (Project Set-up and D&amp;S Inspections)

Monday (Project Set-up and D&amp;S Inspections)

Tuesday

Wednesday

Thursday

Friday

**Halls J/K**

8:00 a.m. – 8:00 p.m.~OFF

8:00 a.m. – 6:00 p.m.~OFF

7:30 a.m. – 9:00 a.m.~Finalists with Infractions only

9:30 a.m. – 11:00 a.m.~Finalists only for Press/PR purposes

7:45 a.m. – 11:45 a.m., 1:15 p.m. – 4:00 p.m.~Finalists and Judges only

9:00 a.m. – 9:00 p.m.~Public Visitation Day

11:30 a.m. – 2:00 p.m.~OFF

**Finalist Resource Center**

Sunday – Monday

Tuesday

**Room 309**

8:00 a.m. – 8:00 p.m.

8:00 a.m. – 12:00 Noon

**Intel Quad**

Sunday, Wednesday

Monday – Tuesday

Thursday

**South Hall Lobby**

12:00 noon – 6:00 p.m.

8:00 a.m. – 6:00 p.m.

10:00 a.m. – 6:00 p.m.

**Intel ISEF Commons 2017 Exhibitors**

Monday

Tuesday

Thursday

**Concourse Hall**

2:00 p.m. – 6:00 p.m.

9:00 a.m. – 6:00 p.m.

8:00 a.m. – 5:00 p.m.

**International/Volunteer Office**

Saturday

Sunday

Monday – Tuesday

Wednesday

Thursday

Friday

**306 A/B**

7:30 a.m. – 6:00 p.m.

7:30 a.m. – 9:00 p.m.

7:30 a.m. – 10:00 p.m.

6:30 a.m. – 7:00 p.m.

7:00 a.m. – 7:00 p.m.

7:00 a.m. – 11:00 a.m.

**Judges' Registration**

Tuesday (SAO judges)

Tuesday (Grand Award judges)

Wednesday (SAO judges)

**South Hall Lobby**

8:00 a.m. – 5:00 p.m.

12:00 noon – 5:00 p.m.

7:00 a.m. – 1:00 p.m.

**Los Angeles Information Booth**

Saturday

Sunday – Tuesday

Wednesday – Thursday

Friday

**South Hall Lobby**

3:00 p.m. – 6:00 p.m.

8:00 a.m. – 7:00 p.m.

8:00 a.m. – 5:00 p.m.

11:00 am. – 2:00 p.m.

**Official Party Registration**

Saturday

Sunday – Tuesday

Wednesday

Thursday

Friday

**South Hall Lobby**

3:00 p.m. – 6:00 p.m.

8:00 a.m. – 9:00 p.m.

7:00 a.m. – 9:00 p.m.

8:00 a.m. – 7:00 p.m.

7:00 a.m. – 9:00 a.m.

**Retail Store**

Saturday

Sunday – Monday, Thursday

Tuesday – Wednesday

Friday

**Halls J/K Concourse**

3:00 p.m. – 6:00 p.m.

8:00 a.m. – 7:00 p.m.

8:00 a.m. – 6:00 p.m.

8:00 a.m. – 2:00 p.m.

**Society for Science & the Public Lounge**

Sunday – Thursday

**Concourse Hall Lobby**

8:00 a.m. – 6:00 p.m.

**Tour Booth**

Sunday – Friday

**South Hall Lobby**

8:00 a.m. – 5:30 p.m.

## Auditorium Safety

Sticks and large flags are prohibited during all ceremonies and will be confiscated at the door. Please do not bring flags or state symbols on stage during the presentation of awards. Large bags are not permitted in the Ceremony Hall. Attendees shall not reserve seats. Reserved seat signs placed by attendees will be thrown away and are not allowed inside the Ceremony Hall.

## Event Security

Admission to all Intel ISEF functions at the Los Angeles Convention Center (LACC) is restricted to persons wearing an Intel ISEF name badge. Intel ISEF participants MUST wear their name badges to participate in fair activities and events. All Intel ISEF badges will be scanned at the entrance of all events and those without badges will be turned away at the door.

## Hotel Safety

- Do not answer the door in a hotel room without verifying who it is. If a person claims to be an employee, call the front desk and ask if someone from their staff is supposed to have access to your room and for what purpose.
- Always walk in groups.
- Always use your hotel's main entrance, especially late in the evening.
- Be observant, and look around before entering parking lots.
- Close the door securely whenever you are in your hotel room and use the locks.
- Do not needlessly display guest room keys or convention badges in public.
- Do not carry large amounts of cash or expensive jewelry. Store valuables in the hotel's safe deposit box.
- Do not offer money or food to the homeless people who may loiter near the hotels.
- Do not invite strangers to your hotel room.
- Make sure sliding glass doors and any connecting room doors are locked.
- Report any suspicious activity to management.

## Hotels

## Address

## Phone

Courtyard Marriott LA Live Hotel	901 W Olympic Boulevard	(213) 443-9222
Hilton Checkers	416 W 8th Street	(213) 612-0021
Hotel Indigo Los Angeles Downtown	535 S. Grand Avenue	(213) 624-0000
JW Marriott Los Angeles LA LIVE	899 Francisco Street	(213) 683-4855
LA Hotel Downtown	900 W. Olympic Boulevard	(213) 765-8600
Los Angeles Athletic Club	333 S. Figueroa Street	(213) 617-1133
Luxe City Center Hotel	431 W. 7th Street	(213) 625-2211
Millennium Biltmore	1020 S. Figueroa Street	(213) 748-1291
Omni Los Angeles Hotel	506 S. Grand Avenue	(213) 624-1011
Residence Inn by Marriott, LA Live	251 S. Olive Street	(800) 843-6664
Sheraton Los Angeles Downtown	901 W Olympic Boulevard	(213) 443-9200
Westin Bonaventure	711 S. Hope Street	(213) 488-3500
	404 S. Figueroa Street	(213) 624-1000

## About 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.

# Visit the Intel ISEF 2017 Commons Los Angeles Convention Center Concourse Hall



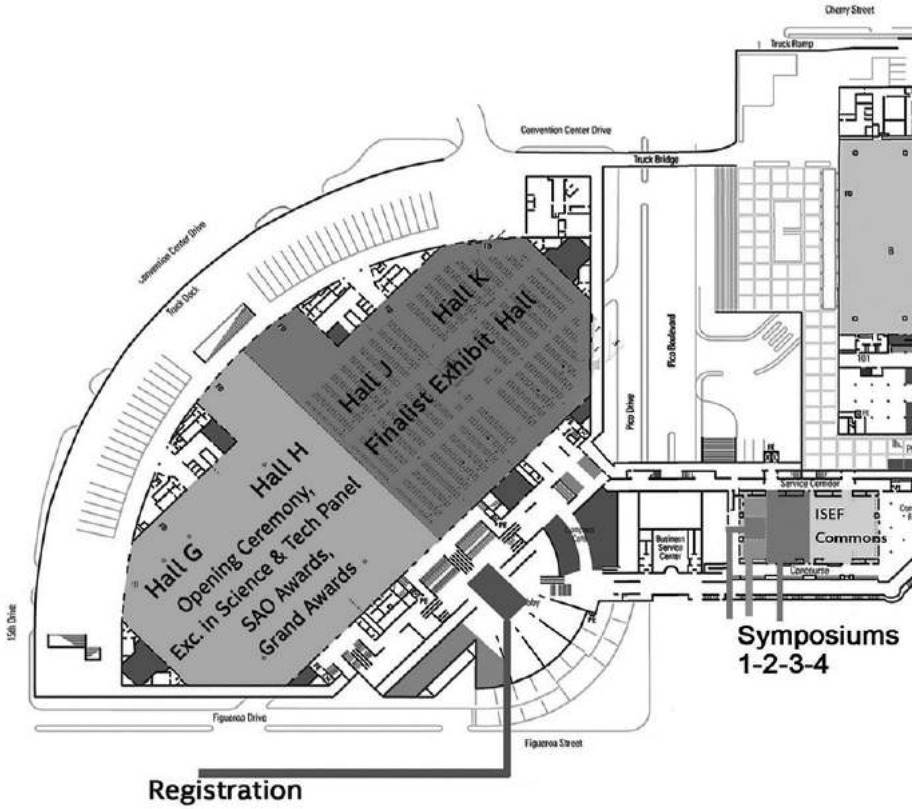
Join us at the Intel ISEF Commons to interact and engage with industry, academic and community organizations.

Hours are:

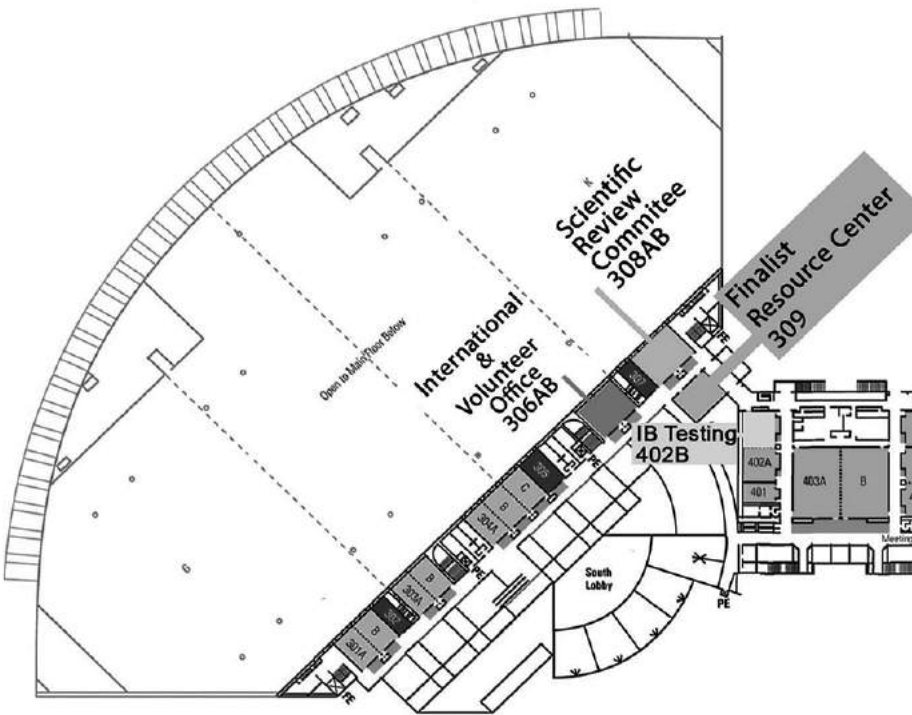
Monday, May 15	2:00 p.m.–6:00 p.m.
Tuesday, May 16	9:00 a.m.–6:00 p.m.
<i>Free refreshments served</i>	<i>9:00 a.m.–11:00 a.m.</i>
Thursday, May 18	8:00 a.m.–5:00 p.m.



# Los Angeles Convention Center



# Los Angeles Convention Center



# Los Angeles Hotels Map







## Los Angeles Convention Center

- 1 Hilton Checkers Los Angeles  
535 S Grand Ave
- 2 Residence Inn by Marriott, LA Live/  
Courtyard Marriott Los Angeles L.A. LIVE  
901 W Olympic Blvd
- 3 JW Marriott Hotel Los Angeles at L.A. LIVE  
900 W Olympic Blvd
- 4 LA Hotel Downtown – A Hyatt Affiliate  
333 S Figueroa St
- 5 Los Angeles Athletic Club  
333 S Figueroa 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 Hotel Indigo Los Angeles Downtown  
899 Francisco St, Los Angeles, CA
- 10 Sheraton Los Angeles Downtown Hotel  
711 S Hope St
- 11 The Westin Bonaventure Hotel & Suites  
404 S Figueroa St



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*Los Angeles*  
TOURISM & CONVENTION BOARD

## Sunday, May 14

See page 16–17 for hours and locations of daily recurring events and resources. All events take place in the Los Angeles Convention Center unless otherwise noted.

- |  |   |                                     |
|--|---|-------------------------------------|
| <b>8:00 a.m.–5:00 p.m.</b><br><i>(Afterwards by appt.)</i> | <b>Project Drop-Off</b>   | <b>Loading Dock Halls J/K</b>       |
|  | 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.   |                                     |
| <b>8:00 a.m.–6:00 p.m.</b>                                 | <b>Society for Science &amp; the Public Lounge</b>  | <b>Concourse Hall Lobby</b>         |
|  | New this year, the Society Lounge will be a place where finalists can hang out in between activities. Please come check it out to relax or participate in fun activities!   |                                     |
| <b>8:00 a.m.–8:00 p.m.</b>                                 | <b>Setup of Projects/ Display &amp; Safety Inspections</b>  | <b>Halls J/K</b>                    |
| <b>8:00 a.m.–8:00 p.m.</b>                                 | <b>Scientific Review Committee Interviews</b>   | <b>308 A/B</b>                      |
|  | Projects must be reviewed and cleared by the Scientific Review Committee (SRC) before they may be set up. An SRC project infraction list will be posted Saturday, May 13 at <a href="http://student.societyforscience.org/intel-isef/attendee">student.societyforscience.org/intel-isef/attendee</a> .  |                                     |
| <b>12:00 noon–6:00 p.m.</b>                                | <b>Intel Quad</b>   | <b>South Hall Lobby</b>             |
|  | The Intel Quad promises to be an exciting, energetic piece of Intel ISEF this year. Guests will be treated to a <b>"VR (Virtual Reality) Playground"</b> —featuring several of the latest VR headsets on the market (Oculus, HoloLens). Video games highlighting 3D camera technology (Intel RealSense Technology) will also be available for engagement! Intel ISEF finalists will also be able to share their musical skills on the <b>Intel Quad Talent Stage</b> where a variety of musical instruments will be available for an impromptu jam session. The Intel Quad will encourage guests to use their creative skills in a variety of ways! The Community Tables will host a <b>"Scribble Bot" creation station</b> where finalists can create their own custom "Scribble Bot"—a simple circuit driven robot with attached markers. The Scribble Bots can then be set free to create an artistic design similar to the classic Spirograph. Guests can also <b>Design Your Own Vinyl Sticker</b> from a variety of Intel ISEF-based designs to print out and take home as a souvenir. The Build Corner will be a hot spot for imaginative activity as finalists are given the opportunity to <b>Design a Rube Goldberg Machine</b> out of simple everyday items—let the fun begin! |                                     |
| <b>7:00 p.m.–9:00 p.m.</b>                                 | <b>Student Pin Exchange</b>   | <b>JW Marriott Diamond Ballroom</b> |
|  | 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.  |                                     |

# Opening Ceremony

Monday, May 15

Los Angeles Convention Center

Halls G/H



Manu Prakash

Assistant Professor of Bioengineering  
Stanford University

Your week at Intel ISEF 2017 kicks off with the Opening Ceremony. This high-energy event will be led by host Derek Muller, Ph.D., physicist, filmmaker and founder of *Veritasium*. The keynote will be delivered by Manu Prakash, Ph.D., co-inventor of the Foldscope, a foldable paper microscope that costs less than one U.S. dollar and is easily distributed. His passion is technological solutions to problems in global health such as developing a 20-cent, hand- powered blood centrifuge.

Born in Meerut, India, Prakash completed his master's and Ph.D. at MIT and was a Harvard Fellow before founding Prakash Lab at Stanford. In 2016 he was named a MacArthur Fellow.

## Monday, May 15

- 8:00 a.m.–12:00 Noon**     **Scientific Review Committee Interviews**     **308 A/B**  
Only for finalists whose projects have not been cleared.
- 8:00 a.m.–6:00 p.m.**     **Intel Quad**     **South Hall Lobby**
- 8:00 a.m.–6:00 p.m.**     **Setup of Projects/  
Display & Safety Inspections**     **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.
- 8:45 a.m.–4:30 p.m.**     **Symposia**     **150 A/B/C, 151**  
See full schedule on pages 32–44.
- 2:00 p.m.–6:00 p.m.**     **Intel ISEF 2017 Commons**     **Concourse Hall**  
All Intel ISEF 2017 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. Intel ISEF name badges will be scanned at entry.
- 6:30 p.m.–7:00 p.m.**     **Opening Ceremony Pre-Show  
Casual Attire**     **Halls G/H**
- 7:00 p.m.–8:30 p.m.**     **Opening Ceremony  
Sponsored by Intel Corporation**     **Halls G/H**  
Opening Ceremony kicks off the week of events for 2017. This high-energy event will be led by master of ceremonies, Derek Muller, Ph.D., physicist, filmmaker and founder of *Veritasium*. The keynote will be delivered by Manu Prakash, Ph.D., head of Prakash Lab at Stanford.
- 8:00 p.m.**     **Final Project Infractions List**  
Posted at Registration, outside of Exhibit Halls, and on [student.societyforscience.org/intel-isef/attendee](http://student.societyforscience.org/intel-isef/attendee).

## Tuesday, May 16

- 7:30 a.m.–9:00 a.m.**     **Project Infraction Clearance**     **Entrance, Halls J/K**  
Both the SRC and D&S committees will conduct a final review of projects on Monday evening and will post at the conclusion of the Opening Ceremony an Infraction List of project IDs of any projects that have problems. Finalists with project infractions must come to the Exhibit Hall on Tuesday at 7:30 a.m. No other persons will be allowed in the Exhibit Hall. A project cannot be judged unless it has been cleared by the SRC or D&S by 9:00 a.m. on Tuesday, May 16.
- 9:00 a.m.–5:00 p.m.**     **Intel ISEF 2017 Commons**     **Concourse Hall**  
*Free refreshments will be served from 9:00 a.m. – 11:00 a.m.*

Don't miss the  
**Intel ISEF Alumni Entrepreneur Panel**  
presented by Society for Science & the Public

Tuesday, May 16, 1:30 p.m.  
Los Angeles Convention Center, Halls G/H



**Kai Kloepfer, 2013**  
Founder, Biofire Technologies  
Massachusetts Institute  
of Technology



**Meredith Lee, 2000**  
Executive Director  
West Big Data Innovation Hub



**Ann Makosinski, 2013**  
Founder  
Makotronics Enterprises  
University of British Columbia



**Sheel Tyle, 2006–2008**  
Principal, Menlo Park & India  
New Enterprise Associates



**Taylor Wilson, 2009–2012**  
Physicist  
Thiel Fellow



**Geoffrey Woo, 2005–2006**  
Co-Founder  
Nootrobox



**Maya Ajmera**  
President & CEO, Society for  
Science & the Public  
Publisher, *Science News*  
Moderator

<b>8:00 a.m.–6:00 p.m.</b>	<b>Intel Quad</b>	<b>South Hall Lobby</b>
<b>8:00 a.m.–6:00 p.m.</b>	<b>Society for Science &amp; the Public Lounge</b>	<b>Concourse Hall Lobby</b>
<b>9:00 a.m.–1:15 p.m.</b>	<b>Symposia</b> See full schedule on pages 32–44.	<b>150 A/B/C, 151</b>
<b>9:30 a.m.–11:00 a.m.</b>	<b>Press/Public Relations Time with Finalists</b> All finalists have the opportunity to come to the Exhibit Hall for scheduled press interviews, impromptu visits from sponsors and dignitaries and to ensure that the booth area is straightened and abstracts displayed before judging begins. Returning items removed by the SRC or D&S and/or adding items that are not permitted after final clearance are grounds for failing to qualify for competition.	<b>Halls J/K</b>
<b>1:30 p.m.–2:30 p.m.</b>	<b>Intel ISEF Alumni Entrepreneur Panel</b> <b>Presented by Society for Science &amp; the Public</b> All attendees are invited to a conversation with Society alumni. Panelists include Kai Kloepfer, Meredith Lee, Ann Makosinski, Sheel Tyle, Taylor Wilson and Geoffrey Woo. Society President & CEO, Maya Ajmera, will moderate the panel.	<b>Halls G/H</b>
<b>2:30 p.m. – 4:00 p.m.</b>	<b>Excellence in Science and Technology Panel</b> <b>Presented by Intel Corporation</b> All attendees are invited to a conversation with Nobel Laureates and other scientific prize winners. Panelists are Martin Chalfie, Elissa Hallem, H. Robert Horvitz, Cato Luarencin and Dianne Newman. The panel will be moderated by NPR Science Correspondent and Society Trustee Joe Palca.	<b>Halls G/H</b>
<b>7:00 p.m.–9:00 p.m.</b>	<b>Student/Observer Mixer Event (Club Novo, Target Terrace and the Grammy Museum)</b> All Finalists and Observers are invited to The NOVO, Target Terrace, and the Grammy Museum. At The Novo, you can dance the night away with DJ Ivy. There will be a variety of cool games at Target Terrace and the Grammy Museum will be open for Finalists and Observers there as well. At the Grammy Museum you can check out exhibits about Lady Gaga, Taylor Swift and hundreds of other musical influencers over time. Dinner will be served at NOVO and Target Terrace. You <b>MUST</b> wear your Intel ISEF badge in order to get into any venues. You are encouraged to move among the venues which are adjacent to each other in the LA Live complex.	
<b>7:00 p.m.–9:00 p.m.</b>	<b>Adult Mixer</b> Adult attendees are invited to their own Dance Party at the JW Marriott. Heavy hors d'oeuvres will be served; there will be a cash bar and dance party with one of LA's coolest DJs.	<b>JW Marriott Diamond Ballroom</b>

Don't miss the  
**Excellence in Science and  
Technology Panel**  
presented by Intel

Tuesday, May 16, 2:30 p.m.  
Los Angeles Convention Center, Halls G/H



**Martin Chalfie**  
Columbia University  
Nobel Prize in Chemistry,  
2008



**Elissa Hallem**  
Hallem Lab, UCLA  
MacArthur Fellow, 2012



**H. Robert Horvitz**  
Nobel Prize in Physiology  
or Medicine, 2002  
Massachusetts Institute  
of Technology



**Cato Laurencin**  
University of Connecticut  
National Medal of Technology and  
Innovation, 2016



**Dianne Newman**  
California Institute of  
Technology  
MacArthur Fellow, 2016



**Joe Palca**  
NPR Science Correspondent  
Moderator

## Wednesday, May 17

- 8:00 a.m.–6:00 p.m.**     **Society for Science & the Public**     **Concourse Hall Lobby Lounge**
- 8:15 a.m.–3:00 p.m.**     **Student Observer Program**     **USC campus**  
For students registered as Student Observers with their Official Party and pre-registered for this event.
- 8:45 a.m.–4:00 p.m.**     **Symposia**     **150 A/B/C, 151**  
See full schedule on pages 32–44.
- 7:45 a.m.–11:45 a.m.**     **Exhibit Hall Open**     **Halls J/K**  
Finalists at Projects for Interviews–Professional Attire  
Finalists & Judges only
- 11:45 a.m.–1:00 p.m.**     **Lunch Break**  
Concession stands and additional seating will be available. No outside food may be brought into the LACC.
- 12:00 Noon–6:00 p.m.**     **Intel Quad**     **South Hall Lobby**
- 1:15 p.m.–4:00 p.m.**     **Finalists at Projects for Interviews**     **Halls J/K**  
Finalists and Judges only–Professional Attire
- 5:00 p.m.–Midnight**     **Intel ISEF Night at Universal Studios Hollywood**  
Universal will open for the exclusive use of Intel ISEF attendees at 7:00 p.m. Food will also be available at no cost to Intel ISEF attendees at that time. For those who arrive early, admission will be granted at 6:00 p.m., but the park will still be open to the public and food will be at a cost until 7:00 p.m. Only Official Party members will be admitted. Buses will depart from the official Intel ISEF block hotels at 5:00 p.m. Guests will enjoy exclusive access to rides, including the Simpsons, Revenge of the Mummy, Jurassic Park the Ride, Shrek 4-D and Harry Potter World. Studio tours will be running until 9:00 p.m. Concession stands will be open and will offer a variety of dining options at no charge starting at 7:00 p.m. Guests are welcome to visit Universal Walk, where they will find a number of shopping opportunities, restaurants and nightclubs. Universal Walk is open to the general public and is NOT for the exclusive use of Intel ISEF participants. All activities in Universal Walk are at the expense of the participant and not Intel ISEF. Transportation back to all block hotels will be continuous throughout the evening until midnight.

## Thursday, May 18

- 9:00 a.m.–1:00 p.m.**     **All Finalists Required at Projects**     **Halls J/K**  
Meal vouchers for lunch will be placed at each finalist's booth. These vouchers may be used at Concession Stands inside the Los Angeles Convention Center. Please note that each voucher is time stamped. You may only use the voucher during this time on May 18. If you spend more than the value of the voucher, then you must pay the difference.



<b>9:00 a.m.–3:30 p.m.</b>	<b>Symposia</b> See full schedule on pages 32–44.	<b>150 A/B/C, 151</b>
<b>9:00 a.m.–9:00 p.m.</b>	<b>Public Visitation Day</b> Finalists' exhibits are open to the public.	<b>Halls J/K</b>
<b>9:00 a.m.–6:00 p.m.</b>	<b>Intel ISEF 2017 Commons</b>	<b>Concourse Hall</b>
<b>10:00 a.m.–6:00 p.m.</b>	<b>Intel Quad</b>	<b>South Hall Lobby</b>
<b>10:00 a.m.–6:00 p.m.</b>	<b>Society for Science &amp; the Public</b>	<b>Concourse Hall Lobby Lounge</b>
<b>7:00 p.m.–10:00 p.m.</b>	<b>Special Awards Ceremony</b> <b>(Doors open at 6:30 p.m.) – Professional Attire</b> Ceremony in which Special Award Organizations, academic institutions and government agencies give awards.	<b>Halls G/H</b>

## **Friday, May 19**

<b>7:00 a.m.–3:00 p.m.</b>	<b>Bag Storage</b> Attendees who are leaving Los Angeles immediately after the Awards Ceremony may store their bags/suitcases in West Hall Lobby. This service will be provided at no charge. Bags and suitcases are NOT permitted inside the Ceremony Hall or left in open areas in the Convention Center. All bags must be retrieved by 3:00 p.m.	<b>West Hall Lobby</b>
<b>9:00 a.m.–11:00 a.m.</b>	<b>Grand Awards Ceremony (Sponsored by Intel)</b> <b>(Doors open at 8:30 a.m.) – Professional Attire</b> All students are to be seated by 8:45 a.m. Awards Ceremony where winners from each category as well as the top overall winners for Intel ISEF 2017 are announced.	<b>Halls G/H</b>
<b>Close of Awards Ceremony – 2:00 p.m.</b>	<b>Exhibit Halls Open for Project Teardown</b> Finalists take down and pack projects for return home. Any stored packing material will be at finalists' project booths. Finalists transporting their own projects will load them upon completion of packing. Projects being shipped via UPS or GES/heavy freight must be packed and processed for shipping by 2:00 p.m.	<b>Halls J/K</b>



***Symposia sessions are an opportunity to share information with students, parents, teachers and fair directors, and do not imply endorsement by Society for Science & the Public. No fees have been paid.***

## **Monday, May 15**

8:45 a.m. to 9:45 a.m.

Room: 150 A

### **Hypothesis Generation in Science: A Science Teaching Challenge and Potential Solution**

Paul Strode, Fairview High School, Boulder, CO

We will discuss student and teacher misconceptions about hypotheses and scientific reasoning and practice strategies for helping students effectively explore hypothesis generation in science.

Type: Workshop

Audience: Fair Directors, Teachers, Students

8:45 a.m. to 9:45 a.m.

Room: 150 B

### **Navigating Intel ISEF—What You Need to Know to Steer Your Way through the Week**

Ingrid Weigand, Austin Science Education Foundation, Austin, TX

Intel ISEF week overview for first time Fair Directors: what to expect on each day, deadlines for certain tasks, how to prepare students for judging, events to attend and resources available.

Type: Presentation

Audience: Fair Directors

8:45 a.m. to 9:45 a.m.

Room: 150 C

### **Regeneron Science Talent Search: Research Competition for U.S. High School Seniors**

Allie Stifel, Society for Science & the Public, Washington, DC

Learn about the nation's oldest and most prestigious STEM competition, a program of Society for Science & the Public, in this general overview session.

Type: Presentation

Audience: Fair Directors, Teachers & Students

10:00 a.m. to 11:00 a.m.

Room: 151

### **Communicating Your Science – and Doing It Well!**

Janet Raloff, Bethany Brookshire and Sid Perkins, Society for Science & the Public, Washington, DC

Let the professionals show you how to write about and discuss your science in such a way that others will understand and care about the message you want to convey.

Type: Workshop, Presentation

Audience: Students

10:00 a.m. to 11:00 a.m.

Room: 150 A

### **Climate Change, Modeling, and Supercomputers**

Mark R. Petersen, Los Alamos National Laboratory, Los Alamos, NM

Climate change research relies on high-resolution computer models to understand the complex, interdependent processes that affect the atmosphere, ocean, and land in the coming century.

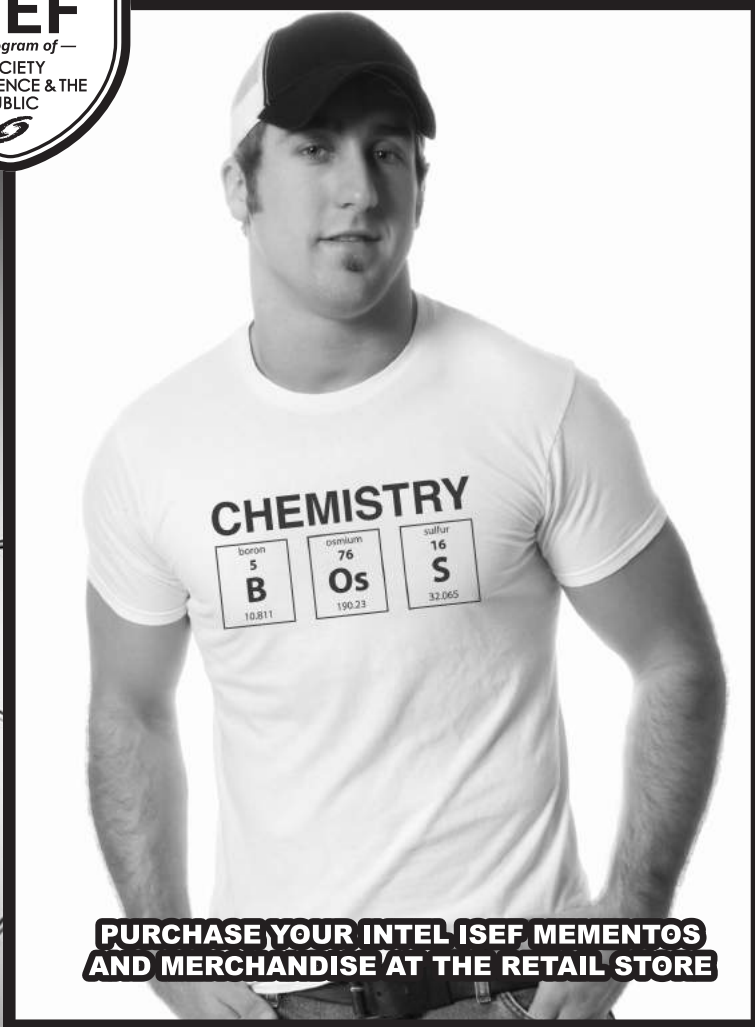
Type: Presentation

Audience: Students



# 2017 INTEL ISEF

LOS ANGELES, CALIFORNIA



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**Intel ISEF STORE HOURS:**

**SATURDAY: 3:00PM - 6:00PM**

**SUNDAY - MONDAY: 8:00AM - 7:00PM**

**TUESDAY - WEDNESDAY: 8:00AM - 6:00PM**

**THURSDAY: 8:00AM - 7:00PM**

**FRIDAY: 8:00AM - 2:00PM**



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10:00 a.m. to 11:00 a.m. Room: 150 C

### **A Smorgasbord of Technology Tips & Tricks**

Kris Clements, Caddo Parish Magnet High, Shreveport, LA

Google shortcuts, Google settings, Google Drive (docs, sheets, forms, and add-ons for each), Remind, Google Hangouts, Multimedia Textsets, Educreations, and Zipgrade will be covered.

Type: Presentation

Audience: Fair Directors, Teachers, Students

11:00 a.m. to 12:00 noon Room: 150 B

### **Leveraging Your Science Fair Experience: Oh the Places You Can Go!**

Maya Ajmera, President & CEO, Society for Science & the Public and Publisher, *Science News*

Life after Science Fair! Bring your questions to a discussion with recent Intel ISEF finalists. Hear about their triumphs, college and career choices and how their science fair experience positioned them to succeed.

Type: Panel Discussion

Audience: Fair Directors, Teachers, & Students

1:15 p.m. to 2:15 p.m. Room: 151

### **Judging at Intel ISEF**

Christopher M. Gould, Judging Chair, Intel ISEF 2017, Los Angeles, CA

Robert Yost, Intel ISEF, Judging Ombudsman

Join us for a question-and-answer session about judging at Intel ISEF. The presenters will explain their roles to aid students during judging and provide a brief overview of the judging process for those new to Intel ISEF.

Type: Presentation

Audience: Fair Directors, Teachers & Students

2:15 p.m. to 3:15 p.m. Room: 150 A

### **Judging Day Tips, Tricks, and Help Crafting Your Pitch!**

Liz Baker, Southern Arizona Research, Science and Engineering Foundation, Tucson, AZ

Get advice on judging from an ISEF winner. Leave with a 30 second introduction to start each interview with confidence!

Type: Workshop

Audience: Students

2:15 p.m. to 3:15 p.m. Room: 150 B

### **Protect Your Intellectual Property: Patents, Trademarks, Copyrights and Trade Secrets**

Dr. Jorge L. Valdes, U.S. Patent & Trademark Office, Alexandria, VA

Learn how intellectual property tools (patents, trademarks, copyrights, trade secrets) can help protect your science and engineering projects and help you continue on the path to innovation.

Type: Workshop, Presentation

Audience: Fair Directors, Teachers & Students

2:15 p.m. to 3:15 p.m. Room: 150 C

### **Promoting Public Health Research Topics Using Hands-on, CDC Outbreak Investigation Scenarios**

Tina Gibson, CDC Science Ambassador Fellow, Columbus, MS

Students and teachers will investigate a recreational water illness using critical thinking skills, mathematics, and an interactive, technology-based activity (phone, iPad or laptop needed).

Type: Workshop

Audience: Fair Directors, Teachers & Students

3:30 p.m. to 4:30 p.m.

Room: 150 A

**Outreach Programs for Teachers at Society for Science & the Public**

Caitlin Sullivan, Society for Science &amp; the Public, Washington, DC

Learn about the Society's Research Teachers Conference, Advocate Grant Program, and STEM Research Grants and share how the Society can continue to support teachers.

Type: Presentation

Audience: Fair Directors, Teachers

3:30 p.m. to 4:30 p.m.

Room: 150 B

**Statistics: The Evolving Grammar of Science**Dr. Thomas H. Short, West Chester University of Pennsylvania, West Chester, PA  
We'll explore issues simmering around statistics—including randomization and simulation, P-values and effect sizes, and analytics and data mining—through examples from scientific research.

Type: Presentation

Audience: Students

3:30 p.m. to 4:30 p.m.

Room: 150 C

**Applying to Highly Selective Engineering Schools Outside of the United States**

Michelle Beaton, Admissions, University of Toronto, Canada

Catherine Eames, Admissions, Imperial College London, United Kingdom

Advice for students considering their international study options from admission professionals at two of the world's leading engineering schools.

Type: Presentation

Audience: Teachers, Students


**EPA SCIENCE**


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

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

**Stay up-to-date on the latest environmental research by subscribing to our Science Matters Newsletter:**

**<https://www.epa.gov/sciencematters>**

**Tuesday, May 16**

8:45 a.m. to 9:45 a.m.

Room: 150 A

**Simplistic Statistics for Secondary Students**

Patricia Zalo, Manatee High School, Bradenton, FL

M&amp;M's will help us review concepts of four inferential tests: Chi square, t-test, z score and Pearson product moment correlation coefficient.

Type: Presentation

Audience: Fair Directors, Teachers &amp; Students

8:45 a.m. to 9:45 a.m.

Room: 150 B

**How to Run Your Fair Without Going Broke!**

Bruce Makous, Chief Advancement Officer, Society for Science &amp; the Public, Washington, DC

Tim Fino, Fair Director, Science &amp; Engineering of Metro Detroit and Michigan Science Fair

Kathleen Bethel, CEO, Southern AZ Research, Science &amp; Engineering Foundation, Tucson, AZ

This interactive presentation from experienced fair directors covers fundraising how-to's for science fairs, large and small. Attendees are encouraged to share the things that work at your fair, as well as what doesn't work.

Type: Panel Discussion

Audience: Fair Directors, Teachers

9:00 a.m. to 9:30 a.m.

Room: 150 C

**Searching for Strong Science on the Internet**

Bethany Brookshire, Society for Science &amp; the Public, Washington, DC

The internet is a great place to find good information and real life scientists. Here's how.

Type: Presentation

Audience: Students

10:00 a.m. to 11:00 a.m.

Room: 150 A

**Protecting Your Intellectual Property: Patents, Trademarks, Copyrights and Trade Secrets**

Dr. Jorge L. Valdes, U.S. Patent &amp; Trademark Office, Alexandria, VA

Learn how intellectual property tools (patents, trademarks, copyrights, trade secrets) can help protect your science and engineering projects and help you continue on the path to innovation.

Type: Workshop, Presentation

Audience: Fair Directors, Teachers &amp; Students

10:00 a.m. to 11:00 a.m.

Room: 150 B

**Teaching Science Communication Skills to High School Students**

JulieAnn Villa, Niles West High School, Skokie, IL

This session will focus on visual communication, distilling a message, and ideas for teaching communication skills. I will also share my experiences building a high school STEM program the past 8 years. Participants are encouraged to bring laptops.

Type: Presentation

Audience: Teachers, Students

10:00 a.m. to 11:00 a.m.

Room: 150 C

**Science Research for the Intermediate Level Student**

Joan Wagner, Greater Capital Region Science and Engineering Fair, Inc., Saratoga Springs, NY

We will share strategies and activities used to prepare students for science research at the Intermediate Level. The program has been used successfully for inner city students who have participated in an after school STEM program (Help Yourself Academies).

Type: Presentation

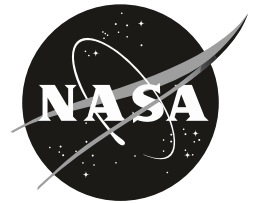
Audience: Teachers

# CAN NCAS OPEN DOORS FOR YOU?

Join the NASA Community College Aerospace Scholars for a 5-week online program for STEM community college students nationwide who are interested in NASA-related careers. Top scoring scholars are invited to an expenses-paid 4-day engineering design workshop onsite at a NASA center.

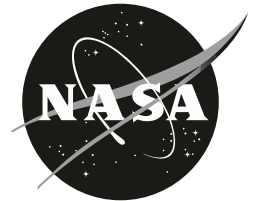
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[facebook.com/NASAInterns](https://facebook.com/NASAInterns)

@NASAInterns



11:15 a.m. to 12:15 p.m. Room: 151

### **Communicating Your Science—and Doing It Well!**

Janet Raloff, Bethany Brookshire and Sid Perkins, Society for Science & the Public, Washington, DC

Let the professionals show you how to write about and discuss your science in such a way that others will understand and care about the message you want to convey.

Type: Workshop, Presentation Audience: Fair Directors, Teachers & Students

11:15 a.m. to 12:15 p.m. Room: 150 A

### **Science Fairs in Virtual Reality**

Petr Klan, University of Economics, Prague, Czech Republic

To show all the steps from physical to virtual science fairs by building of projects in the virtual environment. A practical training of virtual reality is included.

Type: Workshop Audience: Fair Directors, Teachers & Students

11:15 a.m. to 12:15 p.m. Room: 150 B

### **When Researchers Apply to College**

Chris Peterson, Admissions, Massachusetts Institute of Technology, Cambridge, MA

We will discuss elements of the college search and application process as they pertain to your research.

Type: Presentation Audience: Students

11:30 a.m. to 12:00 noon Room: 150 C

### **Chemistry Around Us**

Dr. David Hackleman, Oregon State University, Corvallis, OR

Hands on demonstration of a simple tool to extract essential oils from plants without a chemistry lab that takes only 6 to 15 minutes.

Type: Workshop Audience: Fair Directors, Teachers & Students

12:30 p.m. to 1:15 p.m. Room: 150 A

### **Fast Track Your Career in Database Administration or any Information Technology Discipline!**

Ziaul Mannan, Connecticut STEM Science Fair, Orange, CT

We believe database administrators (DBAs) and information technology (IT) professionals can positively impact their organizations by opening themselves out to new opportunities while evolving into leadership roles. (Feel free to bring your lunch to listen and learn!)

Type: Presentation Audience: Fair Directors, Teachers & Students

12:30 p.m. to 1:15 p.m. Room: 150 C

### **From Exploration to Publication**

Eman Ghanem, Sigma Xi, The Scientific Research Honor Society, Raleigh, NC

Publishing scientific research is a challenging process. Learn how to convert your project into a manuscript and where to submit it for publication.

Type: Workshop Audience: Teachers & Students

## **Wednesday, May 17**

9:00 a.m. to 10:00 a.m. Room: 150 A

### **Getting Students to Write, Think, and Talk Like Scientists**

Paul Strode, Fairview High School, Boulder, CO

We will discuss the workshop model and mentor texts as avenues to improve the student science communication skills of writing and speaking.

Type: Presentation Audience: Fair Directors, Teachers & Students



9:00 a.m. to 10:00 a.m.

Room: 150 B

**Nuts and Bolts on Intellectual Property Law**

Kiran K. Patel, Kramer Amado, P.C., Washington, DC

Ukeme Awakessien Jeter, McDonald Hopkins, LLC

Explore the basic concepts of utilizing intellectual property through an overview of patents, trademarks and copyrights.

Type: Presentation

Audience: Fair Directors, Teachers &amp; Students

9:00 a.m. to 10:00 a.m.

Room: 150 C

**Teaching Current Research and Science Literacy with *Science News* in High Schools**

Anna Rhymes, Society for Science &amp; the Public, Washington, DC

The Society's *Science News* in High Schools program is offering ways to integrate current research and literacy-based learning into classroom curricula to make science more approachable and meaningful for high school students.

Type: Workshop

Audience: Fair Directors, Teachers

10:15 a.m. to 11:45 a.m.

Room: 151

**SRC - 2018 Rules and Guidelines**

Chris Miller, Chair, Intel ISEF Scientific Review Committee

Meet with members of the Intel ISEF Scientific Review Committee to learn of changes in the 2018 International Rules and Guidelines. Following will be a Q&amp;A period.

Type: Presentation

Audience: Fair Directors, Teachers &amp; SRC Members



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1:00 p.m. to 2:00 p.m. Room: 151

**Intel ISEF Display & Safety Rules**

Diane Hecht, Chair, Intel ISEF Display & Safety Committee

Come join the Display & Safety Committee to discuss infractions encountered this year as well as changes to the display and safety rules for 2018. Bring your questions for the committee to answer.

Type: Panel Discussion

Audience: Fair Directors, Teachers

1:00 p.m. to 2:00 p.m. Room: 150 A

**Increase Quality, Diversity and Success at Your Fair...and So Much More!**

Brooke Meyer, Director of Programs, Southern Arizona Research, Science and Engineering Foundation, Tucson, AZ

Create and develop educational outreach programs for all students - including underrepresented populations—to enhance the quality, diversity and success of local and regional fairs.

Type: Presentation

Audience: Fair Directors, Teachers

1:00 p.m. to 2:00 p.m. Room: 150 C

**Explore before Explain! A Case Study on Zika**

Marjorie Miles Dozier, Polk County Schools, Bartow, FL

In this presentation, we will model how to incorporate Explore-Before-Explain into your classroom to increase student engagement, content knowledge and achievement levels on the road to science fair.

Type: Workshop

Audience: Fair Directors, Teachers

2:15 p.m. to 2:45 p.m. Room: 150 C

**Evaluation of Educator and Student Use of and Attitudes Toward Dissection and Dissection Alternatives**

Marcia Kramer, National Anti-Vivisection Society, Chicago, IL

Results of a survey conducted to better understand the use of animal dissection and alternatives among biology students and teachers will be shared.

Type: Presentation

Audience: Teachers

2:15 p.m. to 3:15 p.m. Room: 150 B

**Sharing Best Practices for Effective International Partnerships between Science Fairs and Related STEM Competitions and Organizations**

Barnas Monteith, Chair, Massachusetts State Science & Engineering Fair, Boston, MA

Zhang Pei, Director, US-China Scitech Education Promotion Association

Barnas Monteith and Zhang Pei, will discuss the successes and best practices to create fruitful collaborations among major academic institutions, local and state science fairs and other international groups.

Type: Presentation

Audience: Fair Directors, Teachers & Students

3:00 p.m. to 4:30 p.m. Room: 150 C

**Intel ISEF Scientific Review Committee—SRC Project Review**

Chris Miller, Chair, Intel ISEF Scientific Review Committee

Meet with members of the Intel ISEF Scientific Review Committee to discuss project review by local and regional SRC's and to review "sample" projects. This session is limited to 30 participants who are members of a local or regional SRC. Online registration is required at <https://doodle.com/poll/23kfd4tzwpcsk2hn>.

Type: Workshop

Audience: Local & Regional SRC members

# Unlocking Regenerative Medicine with Cord Blood and Tissue



*Since 1988, there have been more than 35,000 cord blood transplants worldwide.*

*Cord blood is currently used to treat over 80 diseases including sickle cell anemia, lymphoma and leukemia. In the emerging field of regenerative medicine, cord blood is providing great promise in treating spinal cord injuries, autism, diabetes, hearing loss, stroke, brain injuries and more.*

**Regenerative medicine** is a popular topic in today's medical world. The term typically refers to treatments that repair damage, rebuild or build parts of the body. Cord blood is playing a critical role in this emerging field of medicine and showing great promise. Rich in mesenchymal stem cells (MSCs), cord tissue is also valued. Industry leaders, like StemCyte, Inc., are investing specifically in this research which is quickly changing the face of medicine.

## Why is cord blood important?

- A non-controversial source of stem cells
- Rich in pluripotent stem cells
- Readily available and possible to store
- No risk for the donor as collection does not harm the mother or child
- Superior ability to generate blood cells
- Fewer matching criteria than bone marrow



## Partnering for Cord Blood Education:



[www.stemcyte.com](http://www.stemcyte.com) / 1-866-389-4659



[www.savethecordfoundation.org](http://www.savethecordfoundation.org)  
(501c3 non-profit)

## Join Us at Intel ISEF 2017 for a special presentation by Dr. Wise Young, M.D., Ph.D.

World-renowned neuroscientist, Dr. Young will discuss his ground-breaking research using cord blood to potentially treat spinal cord injuries.



## Visit our booth at Intel ISEF

- Learn how cord blood is collected, tested and frozen for future use.
- Meet cord blood experts from Save the Cord Foundation and StemCyte, Inc.
- Register your school for Next Generation: Cord Blood
- Sign up for a lab tour of StemCyte, Inc.

3:30 p.m. to 4:30 p.m. Room: 150 A  
**The People Factor: Overcoming Social Barriers through Sustainability Solutions**  
 Molly Cashion and Robert McGehee, Sustainability Teachers' Academy, Arizona State University, Tempe, AZ  
 History indicates, data confirms—economic, social and environmental inequalities are present in urban settings. This symposium examines Phoenix to evaluate and propose systemic sustainable solutions.  
 Type: Workshop Audience: Fair Directors, Teachers & Students

3:30 p.m. to 4:30 p.m. Room: 150 B  
**Evaluating Your Fair: Are You Making an Impact?**  
 Jody Oostema, Salt Lake Valley Science and Engineering Fair, University of Utah, Salt Lake City, UT  
 Hear the results of our recent three-year fair evaluation and learn how science and engineering fairs impact students, parents, judges and the community.  
 Type: Presentation Audience: Fair Directors, Teachers

## **Thursday, May 18**

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9:15 a.m. to 9:45 a.m. Room: 150 A  
**Impact of Materials on Society: A Materials Research Society Course for High School Students**  
 Dexian Ye, Virginia Commonwealth University, Richmond, VA  
 Materials shape and are shaped by social and cultural variables, thus material science is not only about math and science, but also about social problem-solving.  
 Type: Presentation Audience: Teachers

9:15 a.m. to 10:15 a.m. Room: 150 B  
**Using Social Media Tools to Increase Engagement in Science Fairs**  
 Israt Ahmed, City University of New York, Brooklyn, NY  
 Sharing how New York City Science and Engineering Fair increased our social media presence by over 11 thousand percent within a year and a half.  
 Type: Presentation Audience: Fair Directors, Teachers

11:00 a.m. to 12:00 noon Room: 150 A  
**Broadcom MASTERS: Society for Science & the Public's National Middle School Science & Engineering Competition**  
 Allie Stifel and Parshva Bavishi, Society for Science & the Public, Washington, DC  
 Learn about the Society's national middle school competition in this general informational session. Former top finalists will answer questions and share advice.  
 Type: Presentation Audience: Fair Directors, Teachers & Students

11:00 a.m. to 12:00 noon Room: 150 B  
**How to Develop a Science Research Program and Guide Students in the Research Process**  
 Christine Rogers, Hendrick Hudson High School, Montrose, NY  
 Guidelines and best practices to help teachers develop new science research programs and lead motivated students into the research process.  
 Type: Workshop Audience: Teachers



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**Presentation:**

Tuesday, May 16

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

Room 411



1:15 p.m. to 1:45 p.m.

Room: 150 A

**Get WISE: Growing a Systemic Women in Science & Engineering Club**

Colleen Beall, Frederick County Public Schools, Frederick, MD

Women in Science & Engineering (WISE) encourages females to consider STEM careers through meetings featuring speakers and hands-on activities. Learn about our success and structure.

Type: Presentation

Audience: Fair Directors, Teachers

2:00 p.m. to 3:00 p.m.

Room: 150 B

**Cord Blood Cellular Therapies and Potential Treatments for People with Chronic Spinal Cord Injury**

Charis Ober, Save the Cord Foundation and Dr. Wise Young, M.D., Ph.D., Neuroscientist

Dr. Wise Young, M.D., Ph.D., world renowned neuroscientist, discusses his groundbreaking regenerative medicine research using cord blood stem cells to potentially treat spinal cord injury.

Type: Presentation

Audience: Fair Directors, Teachers & Students

2:15 p.m. to 3:15 p.m.

Room: 150 A

**So, You Want to Be an Astronaut?**

Colonel Todd Ericson (retired) Astronaut Test Pilot with Virgin Galactic  
Col. (Ret.) Andre Gerner, session moderator, SETP, Colorado Springs, CO

Todd Ericson relates his flight test experiences leading up to his current position as an Astronaut Test Pilot of SpaceShipTwo with Virgin Galactic.

Type: Presentation

Audience: Fair Directors, Teachers & Students

3:30 p.m. to 4:30 p.m.

Room: 150 B

**Applying to American Universities as an International Student**

Chris Peterson, Admissions, Massachusetts Institute of Technology, Cambridge, MA

Jann Lacoss, CA Institute of Technology, Dane Rowley, CA Lutheran University, Peter Osgood, Harvey Mudd College, Kenley Jones, University of Redlands  
Advice for international (non-US citizens or permanent residents) students who may be interested in studying at American universities.

Type: Panel Discussion

Audience: Students



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## Who can participate?

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- **Discover the Possibilities** - week-long programs delving into one of three areas: Build and Design; Medical Innovation; Computing Systems to help you narrow in on your strongest interest areas.
- **Focus on the Possibilities** – take a deeper dive into a particular major. Spend time in labs, meet with professors and interact with other students with similar interests.

**Visit MSOE's Open House  
July 15  
10 a.m.–1:30 p.m.**



## Program costs

Total cost, including academic programming, housing, meals, evening activities such as: hypnotist show, River Walk tour, outdoor activities, games, paintball, athletic activities, etc., is \$750 per week. Registration deadline is July 1. Scholarship support information can be found at [msoe.edu/summer-programs-scholarships](http://msoe.edu/summer-programs-scholarships).

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## Los Angeles Restaurants

Back Porch	333 S. Figueroa St.	(213) 617-6090
71 Above	633 W. 5th St. 71st floor	(213) 712-2683
Back Porch	333 S. Figueroa St.	(213) 617-6090
Boca at The Conga Room @ LA LIVE	800 W. Olympic Blvd.	(213) 745-0162
Bonaventure Brewing Co. @ Westin	404 S. Figueroa St., #418A	(213) 238-0802
Bottle Rock—Downtown LA	1050 Flower St.	(213) 747-1100
Broken Spanish	1050 S Flower St.	(213) 749-1460
Bugis St. Brasserie @ Millennium Biltmore	560 S. Grand Ave.	(213) 624-1100
Café Pinot	700 W. Fifth St.	(213) 239-6500
California Pizza Kitchen	735 S. Figueroa St.	(213) 228-8500
Chaya Downtown	525 S. Flower St.	(213) 236-9577
Checkers Downtown @ Hilton Checkers	535 S. Grand Ave.	(213) 891-0519
Corner Bakery Cafe	801 S. Figueroa St.	(213) 239-0424
District @ Sheraton Downtown	711 S. Hope St.	(213) 488-3500
Drago Centro	525 S. Flower St., # 120	(213) 228-8998
Engine Co. No. 28	644 S. Figueroa St.	(213) 624-6996
Faith & Flower	705 W. 9th St.	(213) 239-0642
Famous Players @ LA Athletic Club	431 W. 7th St.	(213) 625-2211
Fleming's Prime Steakhouse @ LA LIVE	800 W. Olympic Blvd.	(213) 745-9911
Ford's Filling Station @ JW Marriott LA LIVE	900 W. Olympic Blvd.	(213) 765-8600
Gallery Bar @ Millennium Biltmore	506 S. Grand Ave.	(213) 624-1011
Glance Lobby Bar @ JW Marriott LA LIVE	900 W. Olympic Blvd.	(213) 765-8600
Grand Cafe	251 S. Olive St.	(213) 617-3300
Illy Espressamente @ JW Marriott LA LIVE	900 W. Olympic Blvd.	(213) 765-8600
Katsuya @ LA LIVE	800 W. Olympic Blvd.	(213) 747-9797
Kendall's Brasserie & Bar	135 N. Grand Ave.	(213) 972-7322
Lakeview Bistro	404 S. Figueroa St.	(213) 624-1000
Lawry's Carvery @ LA LIVE	1011 S. Figueroa St., B115	(213) 763-5441
Ledlow	400 S. Main St.	(213) 687-7015
Live Basil @ LA LIVE	800 W. Olympic Blvd.	(213) 746-5483
McKay's	3540 S. Figueroa St.	(213) 748-4141
The Mixing Room @ JW Marriott LA LIVE	900 W. Olympic Blvd.	(213) 765-8600
Nest at WP24 @ JW Marriott LA LIVE	900 W. Olympic Blvd.	(213) 743-8824
Nixon @ Luxe City Center	1020 S. Figueroa St.	(213) 748-1291
Noe Restaurant & Bar @ Omni	251 S. Olive St.	(213) 356-4100
The Original Pantry Cafe	877 S. Figueroa St.	(213) 972-9279
Patina	141 S. Grand Ave.	(213) 972-3331
Philippe The Original	1001 N. Alameda St.	(213) 628-3781
Plum Tree Inn	913 N. Broadway	(213) 613-1819
Red Mango @ LA LIVE	800 W. Olympic Blvd.	(213) 746-2646
Redbird	114 E 2nd St.	(213) 788-1191
Rendezvous Court @ Millennium Biltmore	506 S. Grand Ave.	(213) 624-1562
The Restaurant @ The Standard	550 S. Flower St.	(213) 439-3030
Ricebar	419 W. Seventh St.	(213) 807-5341
Rock'N Fish @ LA LIVE	800 W. Olympic Blvd.	(213) 748-4020
Rosa Mexicano @ LA LIVE	800 W. Olympic Blvd.	(213) 746-0001
Rosso's Pizzeria	3500 S. Figueroa St.	(213) 748-4141
Smashburger	800 W. Olympic Blvd.	(213) 631-3355
Smeraldi's @ Millennium Biltmore	506 S. Grand Ave.	(213) 624-1011
Starbucks @ LA Live	800 W. Olympic Blvd.	(213) 783-5441
Tom's Urban	800 W. Olympic Blvd.	(213) 746-8667
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	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

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	404 S. Figueroa St.	(213) 622-2045
	@ Westin Bonaventure	
PIP Printing & Marketing Services	700 Wilshire Blvd. @ Hope St.	(213) 489-2333
Universal Reprographics	1322 W Olympic Boulevard	(213) 365-7768
The UPS Store	645 W. 9th St. @ Flower	(213) 620-0081
US Post Office	750 W. 7th St. @ Macy's Plaza	(800) 275-8777

### Drug Stores

Rite Aid	600 W. 7th St. @ Hope St.	(213) 896-0083
Urgent Care Medical Pharmacy	1127 Wilshire Blvd. @ Grand Ave.	(213) 482-0644
Walgreens	917 W. 7th St. @ Grand Ave.	(213) 694-2880

### Grocery Stores

Ralphs Grocery Store	645 W. 9th St. @ Flower St.	(213) 452-0840
Whole Foods Market	788 South Grand Avenue	(213) 873-4745

### Medical/Dental Care

California Hospital Medical Center	1401 S. Grand Ave. @ 14th St.	(213) 748-2411
Good Samaritan Hospital	1136 W. 6th St. @ Lucas Ave.	(213) 977-2121
Health Care Partners	929 Georgia St. @ Olympic Blvd.	(213) 861-5950
Plaza Dental Care	505 S. Flower St. @ 5th St.	(213) 626-6161
USC Care Medical Group	1400 S. Grand Ave. @ 14th St.	(213) 744-0801

### Miscellaneous Stores

Staples Office Supply	1701 S Figueroa St.	(213) 746-6330
Target	735 S. Figueroa St.	(213) 330-4543

### Movie Theatres

Arclight	6360 W. Sunset Blvd.	(323) 464-1748
TCL Chinese Theatre	6925 Hollywood Blvd.	(213) 461-3331
Regal Cinemas LA Live	1000 W. Olympic Blvd. @ Georgia St.	(213) 763-6070

### Shopping Malls

The Beverly Center	8500 Beverly Blvd.	(310) 854-0070
FIGAT7TH Shopping Center	corner of Figueroa and 7th	(213) 955-7170
The Grove	189 The Grove Drive	(323) 900-8080
Hollywood and Highland Center	6801 Hollywood Blvd.	(323) 817-0200
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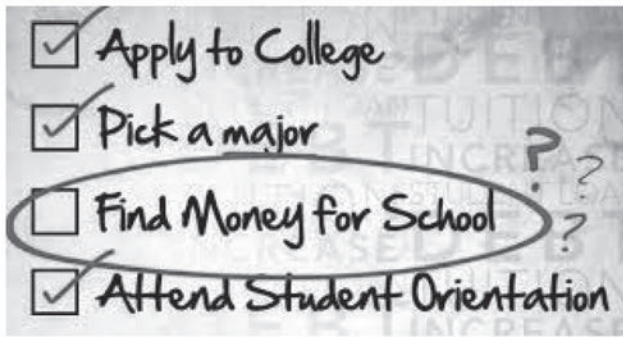
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**Society for Science & the Public thanks the dedicated members of the Los Angeles Local Arrangements Committee who have worked hard in preparation for Intel ISEF 2017:**

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Society for Science & the Public and Intel thank the dedicated committee members of Intel ISEF 2017.

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 Jason Shuffitt  
 Andrea Spencer

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 Rob-Bob Ceglinski  
 Charles Conroy  
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# THINK BEYOND

## Use #IntelISEF

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Society for Science & the Public (the Society), a nonprofit membership organization based in Washington, D.C., owns and has administered the ISEF since its inception in 1950. Through the Intel ISEF, the Society 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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Society for Science & the Public and Intel are proud to announce that the International Science and Engineering Fair will be held in Pittsburgh, Pennsylvania, May 13–18, 2018.



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Complimentary Shuttle Service is provided between the Los Angeles Convention Center and the following hotels:

Hotel	Route	Boarding Location at Hotel
Hilton Checkers Hotel	2	Walk to Millennium Biltmore – Curbside on Grand Avenue
Los Angeles Athletic Club	2*	Walk to Millennium Biltmore
Millennium Biltmore Hotel	2	Curbside on Grand Avenue
Omni Los Angeles	2	Curbside on Olive Street
The LA Hotel Downtown	1	Walk to Bonaventure - Curbside on Figueroa
Westin Bonaventure Hotel & Suites	1	Curbside on Figueroa

\*Los Angeles Athletic Club and Sheraton have return service in the evenings from the LACC - they walk to the LACC in the mornings and during any daytime hours.

## HOURS OF SERVICE

Service between the Los Angeles Convention Center and official INTEL Hotels

<b>Sunday, May 14</b>	
8:00 am – 5:00 pm	Hotels to/from LACC
6:00 pm – 9:30 pm	Hotels to/from JW Marriott
<b>Monday, May 15</b>	
7:00 am – 11:00 am	Hotels to/from LACC
3:00 pm – 9:00 pm	LACC to/from Hotels
<b>Tuesday, May 16</b>	
8:00 am – 4:30 pm	Hotels to/from LACC
6:00 pm – 10:00 pm	Hotels to/from L.A. Live
<b>Wednesday, May 17</b>	
6:00 am – 10:00 am	Hotels to/from LACC
4:00 pm – 6:00 pm	LACC to/from Hotels
5:00 pm – 8:00 pm	Hotels to Universal Studio's
8:00 pm – 12:30 am	Universal Studio's to Hotels
<b>Thursday, May 18</b>	
7:00 am – 2:00 pm	Hotels to/from LACC
5:00 pm – 10:00 pm	LACC to/from Hotels
<b>Friday, May 19</b>	
7:30 am – 2:00 pm	Hotels to/from LACC

For Shuttle Information & Special Assistance:  
**(310) 466-5699**

**Please note: This is a preliminary shuttle schedule and is subject to change. Please check the signage in your hotel lobby, upon your arrival in Los Angeles, for the most current information.**



## Countries, regions, and territories participating in Intel ISEF 2017

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

### AMERICAN SAMOA

*Pago Pago, TEAS01, American Samoa Science Fair*

- EAEV081** **Effect of Stream Nutrients on Benthic Algal Overgrowth in Vatia Bay**  
 Gabrielle Tepora Langkilde, 18, Senior, School: Faatasao Marist High School, Pago Pago, T: Cristina Dizon
- PLNT055** **A Method to Control Microwave Radiation Impact on *Solanum lycopersicum* (Tomato), Using *Zingiber officinale* (Ginger) Extract**  
 Marian Shobita Rajamohan, 17, Junior, School: South Pacific Academy, Pago Pago, American Samoa, T: Cecilia Tuionoula
- PLNT056** **Testing the Effect of *Derris malaccensis* (*Ava Niukini*) Plant Extract on *Rhipicephalus sanguineus* (Brown Dog Tick)**  
 Daln Myung, 16, Sophomore, School: South Pacific Academy, Pago Pago, American Samoa, T: Cecilia Tuionoula

### ARGENTINA

*Ciudad de Buenos Aires, ARG001, National Science Fair of Argentina*

- BMED003T** **Protein Enriched Soup**  
 Luciana Victoria Jacquelin, 19, Senior, Emanuel Andres Cortez, 19, Senior, School: Instituto Provincial de Educacion Tecnica #267 Antonio Graziano, Bell Ville, Cordoba, Argentina, T: Alejandro Corti
- PLNT001T** **Production of Strawberry in Inert Substrate**  
 Greta Yanett Vivero, 20, Senior, Fatima Edith Cardozo, 18, Senior, School: Instituto De Enseñanza Agropecuaria No. 7, Garupa, Misiones, Argentina, T: Maria Rosniski

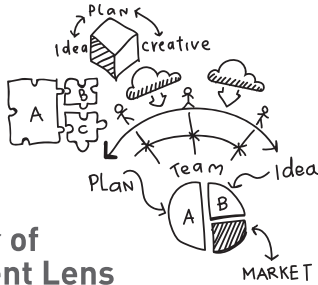
### AUSTRALIA

*Sydney, AUS002, Young Scientist*

- ANIM023** **Grazing Sheep on Deadly Fireweed: A 'Baaaad' Situation?**  
 # Jade Taylor Moxey, 17, Senior, School: Sapphire Coast Anglican College, Bega, New South Wales, Australia T: Beth Worthy
- EAEV089** **In Hot Water – Consequences for Global Fresh Water Quality: A Quantitative Study on the Effects of Rising Freshwater Temperatures on Water Chemistry and Microorganism Biomass and Productivity**  
 Eleanor Lawton-Wade, 17, Junior, School: Presbyterian Ladies' College Sydney, Sydney, New South Wales, Australia, T: Lauren Mitchell
- EGPH016** **The Clever GIRL (Global Intelligent Rip Locator)**  
 Maddison King, 18, Senior, School: Meriden School, Strathfield, New South Wales, Australia, T: Charmian King
- ENEV048** **Slick and Clean: An Investigation into How Magnetite Can Be Used with Organic Sorbents in Oil Spill Clean-Up**  
 Rebekah Kang, 17, Junior, School: Presbyterian Ladies' College, Sydney, New South Wales, Australia, T: Jo-ann McGrouther
- PLNT017** **Up the Creek**  
 Mary-Anne Sandra Poyitt, 17, Junior, School: Redeemer Baptist School, North Parramatta, New South Wales, Australia, T: Joel Poyitt
- TMED016** **SMART ARMOR – Improving Outcomes for Radiotherapy Breast Cancer Patients**  
 # Macinley Neve Butson, 17, Junior, School: The Illawarra Grammar School, Mangerton, New South Wales, Australia, T: Greg Lanyon

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Melbourne, AUS003, BHP Billiton Science and Engineering Awards

**EBED016T Hi-Viz Bike**

Declan Lang Predavec, 14, Freshman, Callum Lang Predavec, 16, Junior, School: Mosman High School, Sydney, New South Wales, Australia, T: Evan Predavec

**ENEV057 Chocolate Garden**

Amber Zhang Kraczkowska, 15, Freshman, School: Pembroke School, Kensington Park, South Australia, Australia, T: Vicki Stavropoulos

**ENMC023 Synth-Etic: The World's First "Hood-Wind" Musical Instrument**

Justin Hughes Mitchell, 15, Freshman, School: St. Kevin's College Toorak, Toorak, Victoria, Australia, T: Luke Miller

**MCRO019 Self-Derived Peptides: Inhibition of Bacterial Growth Without Resistance**

Amy Mei Zhou, 19, Senior, School: Queensland Academies – Health Sciences Campus, Southport, Queensland, Australia, T: Anir Lal

**PLNT020 Salinity Solutions**

Lachlan John Dick, 19, Senior, School: Hellyer College, Burnie, Australia, T: Ann Burke

**AUSTRIA**

Vienna, AUT001, Vienna International Science and Engineering Fair

**ENMC035T Modular Numerical Controlled Prototyper**

Elias Vogel, 18, Senior, Laurenz Caspar Fussenegger, 18, Senior, School: Hoherer Technische Bundeslehr- und Versuchsanstalt Rankweil, Rankweil, Vorarlberg, Austria, T: Andreas Rutzler

**AZERBAIJAN**

Baku, AZR001, Azerbaijan Science and Engineering Fair

**ENMC013T A Novel Aircraft De-icing System: Smart Piezoelectric Skin**

Timur Kalyayev, 17, Junior, Hamid Salimov, 17, Junior, School: Baku European Lyceum, Baku, Absheron, Azerbaijan, T: Seadet Veysova School:

**ENMC014 Prevention Device for Non-Controllable Oil and Gas Blow Out**

Gudrat Muradli, 16, Sophomore, School: Istek Lyceum, Baku, Azerbaijan, T: Eldaniz Tariverdiyev

**ROBO002 Program for the Deaf and Dumb**

Elgun Alishev, 17, Sophomore, School: R. Pirnazarov, Baku, Absheron, Azerbaijan, T: Ramin Mahmudzade

**SOFT007 ELHyOS**

Elshan Naghizade, 16, Sophomore, School: 291 Ecological Lyceum, Baku, Absheron, Azerbaijan, T: Nurane Aliyeva

**BELARUS**

Minsk, BLR001, BeIIEF

**ENEV009 Goldenrod: Alternative Raw Material for Pharmacology and Energetics**

Aliaksandra Kakhavets, 17, Sophomore, School: Zhodino Gymnasium No. 1, Zhodino, Minsk Region, Belarus, T: Iryna Pichuhina

**SOFT008 AirPhone: Cloud Generation Smartphones**

#

Uladzislau Hadalau, 18, Junior, School: State Institution of Education "Secondary School No 11 the Town of Slutsk," Slutsk, Minsk Region, Belarus, T: Uladzimir Zhuk

**BELGIUM**

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

**BEHA020 The Morality of "Larks" and "Owls:" The Relationship Between the Circadian Clock and Morality in Decision-Making**

Naama Schor, 20, Senior, School: High School for Environmental Education, Midreshet Ben Gurion, Belgium, T: Hanna Sivan

**ENBM006T Combo Infusion**

Tal Cohen, 19, Senior, Yuval Feldman, 20, Senior, Amalia Ben Asher, 19, Senior, School: Ort Psagot, Karmial, Galilee, Belgium, T: Itamar Sharoni



**ENBM076T SMART SOCK: The Research of Tenoiresistive Sensors' Operating and Usage in Innovative Technologies**  
Daniela Gods-Romanovska, 20, Senior, Zane Greta Grants, 19, Senior, School: Riga's French Lyceum, Riga, Vidzemes Priekspilseta, Belgium, T: Aleksejs Katasevs, Biruta Skele

**BRAZIL**

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

**BCHM022 Physical-Chemical Analysis of *Hymenaea courbaril* Flour for the Development of Functional Food in Combating Anemia and Child Malnutrition**

Luis Claudio Lucena Duarte, 17, Junior, School: Centro de Ensino Nascimento de Morais, Imperatriz, Maranhao, Brazil, T: Zilmar Soares

**BEHA005T Self-Image of Athletes with Disability: A New Meaning**

Isabela Lopes Dombady, 18, Junior, Julia Assuncao Rolim, 18, Junior, Maria Gabriela de Carvalho Leal, 18, Junior, School: Colegio Giordano Bruno, Sao Paulo, Sao Paulo, Brazil, T: Fabiola Almeida

**BMED004 Effect of Physical Activity upon Mitochondrial Trafficking and Degradation in a Rat Model of Parkinson's Disease**

Carolina Eva Padilha, 18, Senior, School: Colegio Dante Alighieri, Sao Paulo, Sao Paulo, Brazil, T: Carolina Ramos

**BMED006T Restraining the Zika Virus in Brazil: A New Design and Analysis Method for Drugs Through Computational and Biological Approaches**

Gabriel de Moura Martins, 19, Junior, Myllena Cristyna Braz da Silva, 18, Junior, School: Escola de Ensino Medio Joaquin de Figueiredo Correia, Iracema, Ceara, Brazil, T: Sebastiana Bezerra

**EBED002T AcquaNetwork: Measurement and Analysis System for Residential Water Consumption**

Jean Diego Silva Fontena, 20, Senior, Rafael Hoffmann Zibetti, 19, Senior, School: Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brazil, T: Marco Sauer

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- ENEV001T** **Evaluation of Particulate Matter (PM10) Concentration: A Case Study in Camboriu, Brazil**  
Beatriz Faga, 17, Senior, Daniel Caldas de Oliveira, 18, Senior, School: Instituto Federal Catarinense - Campus Camboriu, Camboriu, Santa Catarina, Brazil, T: Joeci Ricardo Godoi
- MATS004T** **Polymeric Mortar of Brick and Block Laying: A Study of Marble Waste Incorporation**  
## Rafael Flores#, 20, Senior, Lucas Engelmann Flores#, 20, Senior, School: Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brazil, T: Schana Andreia da Silva
- PLNT002** **BioPatriam: Biodiversity Preservation with Brazilian Native Plant**  
# Maria Eduarda Santos de Almeida, 18, Senior, School: Instituto Federal de Educacao, Ciencia e Tecnologia do Rio Grande do Sul (IFRS)–Campus Osorio, Osorio, Rio Grande do Sul, Brazil, T: Flavia Santos Twardowski Pinto
- TMED001** **Stimulus Changing in Three-Dimensional Movement Due to Horse Gait Amplitude Variations and Its Effects on Hippotherapy Practitioners**  
Milena Julia Chirolli, 18, Senior, School: Instituto Federal de Educacao Ciencia e Tecnologia Catarinense - Campus Rio do Sul, Rio do Sul, Santa Catarina, Brazil, T: Vera Freitas Paniz
- Sao Paulo, BRA002, FEBRACE - Feira Brasileira de Ciencias e Engenharia*
- BMED042** **Evaluation of the Most Efficient Detergent for Pancreatic Decellularization Aiming at the Development of a Bioartificial Pancreas for Type 1 Diabetes Treatment**  
Gabriel Ronatty Tavares Santos, 18, Senior, School: ETEC Guaracy Silveira, Sao Paulo, Sao Paulo, Brazil, T: Marluce da Cunha Mantovani
- CBIO017T** **Computational Modeling of the Epidemiological Spread of Diseases Caused by *Aedes aegypti***  
Amanda Ozava Fernandes, 18, Junior, Marcella Linhares Menezes, 19, Junior, Livia de Oliveira Rodrigues, 18, Junior, School: Centro Federal de Educacao Tecnologica de Minas Gerais - Campus Leopoldina, Leopoldina, MG, Brazil, T: Gustavo Montes Novaes
- CBIO018** **Biological Networks and the Relation Between Mitochondrial Genes and Functions with the Obsessive-Compulsive Disorder**  
Giovanna Lemos Ribeiro, 18, Senior, School: Colegio Pentagono, Sao Paulo, Sao Paulo, Brazil, T: Carolina Cappi
- EBED021** **JustStep: Voice Message System for Tactile Ground Surface Indicator (TGSi)**  
Lorena Santos Vilas Boas, 19, Senior, School: Instituto Federal da Bahia (IFBA)–Campus Salvador, Salvador, BA, Brazil, T: Justino de Araujo Medeiros
- ENBM032T** **SmartLeg–Smart Transfemoral Prosthesis II**  
Arthur de Freitas e Precht, 18, Senior, Luciano Sampaio da Silva, 19, Senior, Leonardo Azzi Martins, 17, Senior, School: Instituto Federal de Educacao, Ciencia e Tecnologia - IFSUL Campus Charqueadas, Charqueadas, RS, Brazil, T: Diego Afonso da Silva Lima
- ENBM059** **Hermes Braindeck: A Brain-Computer Interface for Communication with Patients Initially Classified as Comatose or Vegetative**  
## Luiz Fernando da Silva Borges, 19, Senior, School: Instituto Federal de Educacao, Ciencia e Tecnologia de Mato Grosso do Sul–Campus Aquidauana, Aquidauana, Brazil, T: Lucas Remoaldo Trambaiolli
- ENEV036** **Development of a Novel Biodegradable Plastic Film with *Passiflora edulis* Byproduct**  
Juliana Davoglio Estradioto, 17, Junior, School: Instituto Federal de Educacao, Ciencia e Tecnologia do Rio Grande do Sul–Campus Osorio, Osorio, RS, Brazil, T: Flavia Santos Twardowski Pinto
- MATS030T** **Corn Cob Particleboard: Ecological Product Manufactured with Corn Cob and Husk Residue**  
Marcelo Abraao de Melo Ramalho, 18, Senior, Beatriz da Costa Dantas, 17, Senior, School: Escola Estadual Joao de Abreu, Barauna, RN, Brazil, T: Priscilla Gurgel Rodrigues

- MCRO028**     **Using Microbial Metabolites to Develop an Alternative to Combat *Klebsiella pneumoniae carbapenemase (KPC)***  
 #     Maria Vitoria Valoto, 17, Senior, School: Colegio Interativa, Londrina, PR, Brazil,  
 T: Fabio Luiz Ferreira Bruschi  
*Campinas, BRA003, Escola Americana De Campinas*
- EAEV028**     **Investigating the Effects of Nanosilver in Pond Water Quality**  
 Laura Zampini, 18, Junior, School: Escola Americana de Campinas, Campinas,  
 Sao Paulo, Brazil, T: Peter Luger
- EAEV059T**     **Comparison of Hazardness Caused by Different Levels of pH  
 on Phytoplankton**  
 Isabella Machado Freitas Vilela Gouveia, 17, Freshman, Sieun Park, 16,  
 Freshman, School: Escola Americana de Campinas, Campinas, Sao Paulo,  
 Brazil, T: Felipe Tolentino, Rafael Stocco
- ENEV025**     **Removal of Heavy Metal Ions from Industrial Wastewater Using Algal  
 Polysaccharide Alginate**  
 Matheus Colsato Bevilacqua, 19, Senior, School: Escola Americana de  
 Campinas, Campinas, Sao Paulo, Brazil, T: Mauricio Gozzi
- BULGARIA**  
*Sofia, BGR001, Bulgarian Science and Innovation Fair*
- MATH002**     **Bijections Between Graphs and Tilings with Walkup Property**  
 Tanya Ivanova Otsetarova, 18, Junior, School: Akademik Kiril Popov High  
 School of Mathematics, Plovdiv, Bulgaria, T: Kristian Georgiev
- MATH003**     **On the Distortion of Embedding Perfect Binary Trees into Low-  
 Dimensional Euclidean Spaces**  
 #     Dona-Maria Radoslavova Ivanova, 19, Senior, School: Baba Tonka Upper  
 Secondary High School, Ruse, Bulgaria, T: Evelina Mincheva
- SOFT002**     **Linux Processes' Memory Visualization**  
 Vasilen Rosenov Tsvetkov, 18, Junior, School: High School of Mathematics  
 "Dr. Petar Beron," Varna, Bulgaria, T: Eleonora Pavlova

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## CANADA

*Canada, CAN002, Youth Science Canada – Team Canada*

- BEHA054** **Deep Learning for Autism Diagnosis: Insights into Genomic and Phenotypic Features**  
Harkirat Bhullar, 16, Sophomore, School: Evan Hardy Collegiate Institute, Saskatoon, Saskatchewan, Canada, T: Sarah Clark
- BMED071** **Analysis of Electrodermal Activity to Quantify Stress Levels in Autism**  
Kayley Noelle Ting, 17, Junior, School: The Academy for Gifted Children – P.A.C.E., Richmond Hill, Ontario, Canada, T: Cary Knight
- CBIO044** **Computational Discovery of Potential NS3 Protease Inhibitors of Zika Virus**  
# Marcus Douglas Anthony Deans, 16, Sophomore, School: Academie Ste. Cecile International School, Windsor, Ontario, Canada, T: Benjamin Cooper
- ENBM069** **A Novel Isothermal Microfluidic Device to Detect Salivary MicroRNAs in Breast Cancer**  
Lucas Jeffrey Penny, 18, Senior, School: Grimsby Secondary School, Grimsby, Ontario, Canada, T: Leanne Travis
- ENMC067** **You're Out! An Electronic Baseball Umpire**  
Elias Andersen, 17, Junior, School: Pretty River Academy, Collingwood, Ontario, Canada, T: Ross McIntosh
- MCRO060** **The Effects of Silver Nanoparticles on the Ionic Silver Resistance Plasmid (pMG101)**  
Adam Radek Martinez, 15, Freshman, School: Waterloo Collegiate Institute, Waterloo, Ontario, Canada, T: Mark Menhennet
- PLNT051** **Fabulous Molecular Markers: Preventing Favism by Identifying Faba Bean Mutants**  
Melody Song, 17, Junior, School: Evan Hardy Collegiate Institute, Saskatoon, Saskatchewan, Canada, T: Sarah Clark
- Hamilton, CAN001, Bay Area Science and Engineering Fair*
- BMED070** **The Antimicrobial Efficacy of Stainless Steel, Copper and Brass for the Reduction of Nosocomial Illness**  
Margaret Anne Williams, 18, Senior, School: Ancaster High School, Ancaster, Ontario, Canada, T: George Geczy
- EGPH027** **From a Single Moment of Force to Sustainable Energy: Achieving Optimal Frequency for Piezoelectricity**  
Arielle Ese Ainabe, 16, Sophomore, School: Garth Webb Secondary School, Oakville, Canada, T: Kathleen Murphy
- ENBM063** **Membrane-Based Nanostructured Biosensor to Detect Hemolytic Bacteria**  
Camila Moran-Hidalgo, 15, Freshman, School: Westdale Secondary School, Hamilton, Ontario, Canada, T: George Geczy
- MATS059** **G – Glove: An Environmentally Friendly and Cost Effective Alternative to Present Day Surgical Gloves**  
Jack Edward Mogus, 17, Junior, School: Garth Webb Secondary School, Oakville, Ontario, Canada, T: George Geczy
- MATS071** **Hydrothermal Synthesis of ZnO Nanorod Cluster Thin Films for Low-Dimensional Thermoelectric Applications**  
Andres Esteban Lombo, 18, Senior, School: Saint Thomas Aquinas Catholic Secondary School, Oakville, Ontario, Canada, T: George Geczy
- Montreal, Quebec, CAN004, Montreal Regional Science and Technology Fair*
- BMED057** **eX Marks the Spot: A Novel Method in Diagnosing PCa via Exosome Analysis**  
Labib-Daiyan Syed, 17, Junior, School: Centennial Regional High School, Green Field Park, Quebec, Canada, T: Barry Dobbs
- EGCH029** **BIO-CELL: A Novel MicroCHP pMMO Enzymatic Biofuel Cell for the Generation of Clean and Reliable Electrical Energy**  
# Thomas Raimundo Ribeiro, 17, Junior, School: Laval Senior Academy, Laval, Quebec, Canada, T: Heather Mcpherson
- ENBM052** **Novel Iron-Regulating Hydrogel for the Treatment of Diseases with Iron Dyshomeostasis**  
Marc S. Henein, 18, Senior, School: College Jean-de-Brebeuf, Montreal, Quebec, Canada, T: Francois Raymond

**CHILE**

Santiago, CHL001, *EXPLORA National Youth Science Conference*

**ANIM043T Association Floral of the Nectar Thief *Bombus terrestris* (Linnaeus, 1758) (Hymenoptera: Apidae) and Its Degree of Dispersion in Magallanes, Chile**  
 Gianfranco Cavallieri, 17, Junior, Pablo Sanhueza, 17, Junior, School: Colegio Luterano, Punta Arenas, Chile, T: Alan Maldonado

**CHINA**

All of China, CHN001, *China Adolescents Science and Technology Invention Contest*

**ANIM002 Why Backward in Hunting? A Comprehensive Study of Antlions**  
 Xiwen Zhang, 15, Freshman, School: The High School Affiliated to Beijing Normal University, Beijing, China, T: Junju Zhang

**CELL002 Temporal Dissection of Microtubule-Based Motor CENP-E in Mitosis**  
 Wuzhekai Zeng, 17, Junior, School: Hefei No. 8 Senior High School, Hefei, Anhui, China, T: Zhe Shi

**CHEM002 Controllable Synthesis and Electro-Catalytic Performance of the Anodic Catalysts for the Electro-oxidation of Methanol**  
 Tie Wang, 17, Junior, School: Experimental School of Beihang University, Beijing, China, T: Chun-Hua Yan

**EBED004 # A Novel Anti-Interference & None Misjudgment Digital Optical Sensor**  
 Chentian Li, 17, Sophomore, School: No. 1 High School Zhuhai City, Zhuhai, Guangdong, China, T: Qingsheng Liang

**EGCH004 The Straw Carbon Material as the Cathode Material for Lithium-Sulfur Batteries**  
 Liyan Chang, 17, Junior, School: Shanghai Jianping High School, Shanghai, Shanghai, China, T: Bi Wei Feng

**ENBM001 The Preparation of PLGA Microspheres with Calcium Alginate Surface Modification**  
 Keyi Zheng, 16, Sophomore, School: Hangzhou No. 14 High School, Hangzhou, Zhejiang, China, T: Xiaomei Tang

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[youtube.com/UCRiverside](https://www.youtube.com/UCRiverside)
[ucradmissions](https://www.linkedin.com/company/ucradmissions)

- ENBM002T Sleep Improvement Study with Wearable LED Goggles Based on Citopic Effect**  
YuLiang Wang, 17, Sophomore, Zhou, 16, Sophomore, School: High School Affiliated to Fudan University, Shanghai, China, T: Yu Peng Yuanheng, Qiang Wu
- ENBM005 Body Balance Ability Monitor Based on Acceleration Spectrum Analysis**  
Zewei Shi, 18, Junior, School: Beijing No. 4 High School, Beijing, China, T: Zeng Gao
- ENMC004T Fast & Self-Stabilized Image Platform**  
YanYi Wang, 16, Freshman, YuFei Li, 15, Freshman, School: Beijing No.4 High School, The High School Affiliated to Renmin University of China, Beijing, China, T: XueMei Li, Qian Xu
- MATH005 The Iterations of Tent Maps**  
Yang YuChen, 17, Junior, School: High School No.7 Chengdu Sichuan P.R. China, Chengdu, Sichuan, China, T: Chen XingWu
- MATH006 # A Class of Convex Curves Arising in Capillary Floating Problem**  
Shilun Li, 17, Junior, School: Guangdong Experimental High School, Guangzhou, Guangdong, China, T: Yidong Wu
- MATH007 On the Effective Hilbert Zero Point Theorem**  
Yilan Tan, 17, Junior, School: No. 2 High School of East China Normal University, Shanghai, China, T: Feng Qian
- MATS005 Development of Novel Oil-Water Separating Apparatus Based on Superhydrophobic Metal-Mesh**  
Zhiheng Zhang, 17, Junior, School: Beijing 101 Middle School, Beijing, China, T: Huawei Chen
- MATS011T A Wearable Electronic Anti-Smog Face Mask**  
Haoyu Zhang, 17, Junior, Qiaochu Fan, 17, Junior, Kaining Zhou, 17, Junior, School: Chengdu No. 7 High School, Chengdu, Sichuan, China, T: Yukun Zhang
- PHYS003 Behind a Wisp of Smoke: Study of the Morphology of Airflow and the Cause of Stripes Formed by Smoke Particles Over a Heat Source of Constant Temperature**  
Xunjing Wei, 18, Senior, School: Shanghai High School, Shanghai, Shanghai, China, T: Sheng Li
- PHYS004 Research on Abnormal Thermal Expansion Properties of MnNiGe-Based Compounds**  
Yufei Liu, 18, Junior, School: Capital Normal University High School, Beijing, China, T: Ying Sun
- PHYS005 Asteroid Photometry with Small-Aperture Telescopes**  
Junda Liu, 20, Senior, School: Suzhou High School of Jiangsu Province, Suzhou, Jiangsu, China, T: Jin Zhang
- PHYS031 Study on Wireless Power Transfer Technology Toward the Application for Cardiac Pacemaker**  
Mengyang Li, 17, Junior, School: Chongqing Nankai Secondary School, ShaPingBa District, ChongQing, China,T: ShengBin Chen
- ROBO003 Using Reinforcement Learning to Guide Game Rule Design**  
Yu Lou, 18, Senior, School: Beijing Number 4 High School, Beijing, China, T: Bo Qin
- ROBO004 Simulation and Improvement of Non-Obstacle Flocking for Multi-Agents System with a Virtual Leader**  
Dongqing Wang, 18, Senior, School: The Experimental High School Attached to Beijing Normal University, Beijing, China,T: Huan Zhao
- SOFT004 Design and Construction of Smart DNS System Based on Distributed Smart Router and Cloud**  
He Huang, 18, Junior, School: YK Pao School, Shanghai, China, T: Xiao Yang Wang
- Chengdu, CHN008, Sichuan Science Fair*
- ENBM048 # Prosthetic Replacement Technology Mark 6 (PRT-6)**  
Aristomenes Tambakis, 17, Sophomore, School: QSI Chengdu, Chengdu, Sichuan, China, T: Desiree Martin

- ENBM053T Improved Detection of Cardiac Troponin I with Reduced Antibodies**  
 Chia Chi Chang, 17, Junior, Matthew Lin, 17, Junior, School: Shanghai American School Pudong Campus, Shanghai, China, T: Gary Serbent
- MATH025T Bounds on the Metric Dimensions for Families of Planar Graphs**  
 Michael Haochun Sun, 17, Junior, Carl Joshua Tiangco Quines, 17, Junior, Schools: Shanghai American School Puxi, Shanghai, China, Valenzuela City School of Mathematics and Science, Valenzuela, Manila, Phillipines, T: Alan Chan, Marilyn Soriano
- MATS046T Antimicrobial "Super" Joints: Adding Silver to Titanium Nitride Physical Vapor Deposition Coating for Artificial Joints**  
 Hanyue Terri Liu, 17, Junior, Xiangting Andrea Liu, 15, Freshman, School: International School of Beijing, Beijing, China, T: Debra Monroe
- MCRO020T The Synergistic Effects of Silver Nanoparticles and Antibiotics on Drug-Resistant Bacteria**  
 Yuxin Sha, 17, Junior, Andy Jesse Zhao, 17, Junior, Kyra Ti Chan, 17, Junior, School: Shanghai American School Puxi, Shanghai, China, T: Alan Chan

**CHINA, HONG KONG SPECIAL ADMINISTRATIVE REGION**

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

- CHEM008 Chlorophyll Cysteine Co-catalyzed Biodegradable Poly (Methyl 2-methylpropenoate)**  
 Yuk Chun Cheng, 18, Senior, School: King's College, Hong Kong Special Administrative Region, T: Bob Lui
- EAEV011T The Synthesis of High Oil Affinity Ester Macro Molecule with Renewable Resources**  
 Pok Him Michael Leung, 17, Junior, Yu Hin Ching, 17, Junior, King Lun Chan, 17, Junior, School: Po Leung Kuk Ngan Po Ling College, To Kwa Wan, Kowloon, China, Hong Kong Special Administrative Region, T: Man Kit Cheng



- EBED005 Photosensitive Panoramic Photography Device**  
Hin Wang Lin, 19, Senior, School: Yuen Long Merchants Association Secondary School, Hong Kong Special Administrative Region, T: Ka Ho Sin
- EGCH005 Cocktail of Natural Dyes as Photosensitizers for Dye-Sensitized Solar Cell**  
Kai Yui Ho, 17, Junior, School: Pak Kau College, Hong Kong Special Administrative Region, T: Fu Wai Lai
- EGCH012T Eco-Flex Lite Capacitor**  
Tsun Ting Sin, 16, Sophomore, King Fun Chow, 16, Sophomore, Guanqun Zhou, 16, Sophomore, School: The Chinese Foundation Secondary School, Siu Sai Wan, China, Hong Kong Special Administrative Region, T: Chun Man Ho
- ENMC024T Aircraft Nut Tension Monitoring Washer**  
Pui Shan Lee, 17, Junior, Ka Ki Ng, 15, Freshman, Grace Gao, 17, Junior, School: SKH Li Ping Secondary School, Hong Kong Special Administrative Region, T: Ka Lee Chow

## CHINA, MACAO SPECIAL ADMINISTRATIVE REGION

*Macao, MAC001, Macao Region Science Fair*

- BEHA052T Behave It or Not: A Novel Methodology for Health Integrating Behaviorism by Means of Mobile Devices**  
Fan Lam Ng, 19, Senior, Weng Lam Chan, 18, Senior, School: Escola Keang Peng, Macao, Macao, China, Macao Special Administrative Region, T: Kai Heng Lam
- ENEV064T Smart Pleco: A Multi-Functional Eco-Friendly Unmanned Craft for Waterbodies Protection**  
##  
Chon Hin Ho#, 18, Senior, School: Pui Ching Middle School Macao, Macao, Macao T: Kun Wa Lao Chon Hou Leong#, 17, Junior, School: Pui Ching Middle School Macau, Macao Special Administrative Region, T: Kun Wa Lao
- ENMC068T The Analyzer for Testing the Roughness Quality of Surfaces**  
Chin leong Kong, 18, Senior, Wen Jing Liang, 20, Junior, School: The Workers' Children High School, Macao Special Administrative Region, T: Yi Xing Liang

## CHINESE TAIPEI

*Taipei, TWN001, Taiwan International Science Fair*

- BMED031 Protective Effects of Chitosan oligosaccharide on Blue LED Induced Retinal Pigment Epithelial Cell Damage**  
Hsiao-Han Huang, 19, Senior, School: Taipei First Girls High School, Taipei City, Taiwan, Chinese Taipei, T: Yi-Hsu Chen
- BMED034 Imbalanced Folate Status Promotes Metabolic Stress, Cancer Stem Cell Phenotype, and Proteomic Signatures of Human Breast Cancer Cells**  
Angel Huang, 19, Senior, School: Taipei American School, Taipei, Chinese Taipei, T: Jude Clapper
- CHEM020T High Efficiency TADF-Based Transparent OLEDs**  
Yi-Chen Chen, 18, Junior, Yun-Ching Wu, 17, Junior, School: Taipei First Girls High School, Taipei City, Taiwan, Chinese Taipei, T: Ken-Tsung Wong
- EAEV024T A Geochemical Investigation of Volcaniclastic Rocks from Northern Taiwan: A Provenance Study**  
Pin-Lan Liu, 18, Senior, Hsu-Feng Ou, 19, Senior, School: Affiliated Senior High School of National Taiwan Normal University, Taipei, Taiwan, Chinese Taipei, T: I-Wen Hung
- EBED045 Paper Circuit Printer and Its Applications**  
Chia-Yu Yeh, 19, Senior, School: Chung Shan Industrial & Commercial School, Kaohsiung City, Taiwan, Chinese Taipei, T: Chen-Che Yang
- MATH024 Which Maps Are 4-List Colorable?**  
Juei-Yin Lin, 17, Junior, School: Taipei First Girls High School, Taipei City, Chinese Taipei, T: Tsung-Ying Yang
- MATH049 Chance or Coincidence-Counting 3-Arithmetic Progression in Block-Generated Thue-Morse String**  
Yuan-Jung Juang, 18, Senior, School: National Tainan Girls' Senior High School, Tainan City, Chinese Taipei, T: Yu-Chen Shu



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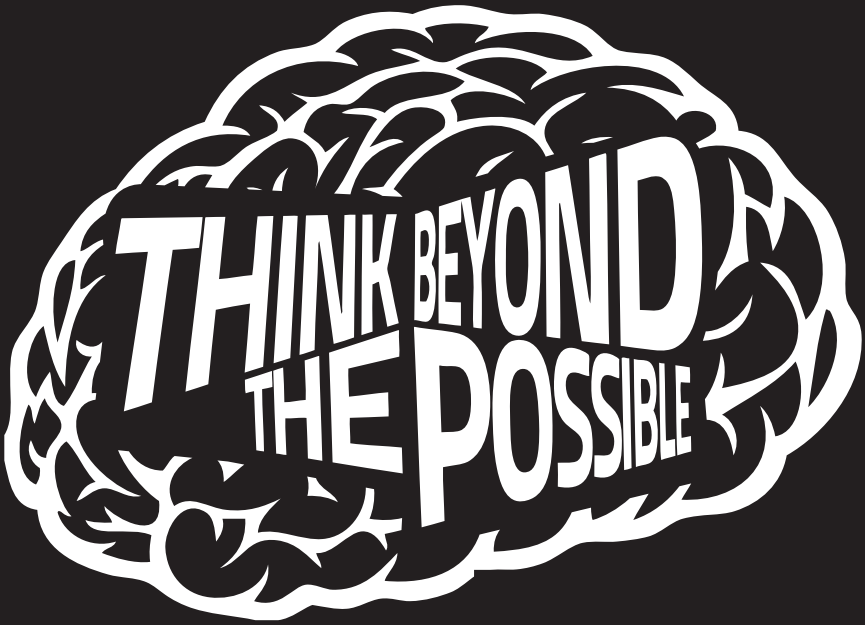
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- PHYS020T** **A Swinging Atwood's Machine that Hiccups**  
Zi-Yi Tai, 18, Senior, Shao-Yi Yu, 18, Senior, School: Taipei Municipal First Girls, Taipei City, Taiwan, Chinese Taipei, T: Yih-Yuh Chen
- ROBO013T** **A Bionic Cognitive Based SLAM System**  
Yang Yeh, 18, Junior, Cheng-Hsun Ho, 18, Junior, School: Taipei Municipal Jianguo High School, Taipei City, Taiwan, Chinese Taipei, T: Greg Lee
- COLOMBIA**  
*Medellin, COL001, Colombia Science & Engineering Fair*
- MATS076T** **VALIX: Obtaining and Implementing Polysaccharides (Banana, Cassava and Yam Starch) in the Gradual Replacement of Synthetic Polymers Used in the Manufacture of Packing or Packaging**  
Valeria Valencia Henao, 18, Junior, Maria Ximena Arredondo Montoya, 17, Junior, Santiago Alexis Valencia Zapata, 18, Junior, School: Institucion Educativa Colegio Loyola Para la Ciencia y la Innovacion, Medellin, Antioquia, Columbia, T: Robinson Salazar Diaz
- Bogota, COL002, Feria Nacional de Ciencia, Tecnologia e Innovacion*
- ENEV078T** **Biodiversity of Microalgae and Use in Decontamination of Cheese Whey in Water Waste in the Tobal Carcasi**  
Gelver Edilson Carvajal Medina, 16, Sophomore, Eduar Cuadros, 19, Sophomore, School: Institucion Educativa El Tobal, Carcasi, Santander, Columbia, T: Bernardo Rey Moreno
- COSTA RICA**  
*San Pedro de Montes de Oca, CRI001, Feria Nacional de Ciencia y Tecnologia*
- ANIM003** **Biocontrol of the *Taeniopoda reticulata* (Locust) Plague Using the Fungus *Metarhizium anisopliae***  
Diego Alonso Martinez Gutierrez, 16, Freshman, School: Colegio Tecnico Profesional de Upala, Upala, Alajuela, Costa Rica, T: Cristian Orozco Vega
- PLNT003T** **Evaluation of Biofungal Activity of the Castor Oil Plant (*Ricinus communis*) Seed for the Control of Anthracnose (*Colletotrichum gloeosporioides*) in Avocado (*Persea americana*) *in vitro***  
Sofia Pacheco-Thomas, 18, Junior, Priscilla Solera-Rodriguez, 18, Junior, School: Colegio Tecnico Profesional Piedades Sur, San Ramon, Alajuela, Costa Rica, T: Arleth Orozco Munoz
- San Jose, CRI002, National Engineering Expo*
- ROBO007** **Device for Teaching and Learning the Braille Alphabet**  
Luis Javier Mora Barrantes, 18, Junior, School: Colegio Tecnico Profesional de Mora, Ciudad Colon, San Jose, Costa Rica, T: Julio Sanabria Solis
- CZECH REPUBLIC**  
*Hradec Kralove, CZE001, Students' Professional Activities (SPA)*
- BCHM005** **The Role of RAD51 Mutation in Cancer Development**  
Karina Movsesian, 18, Sophomore, School: Prvni Ceske Gymnazium v Karlovych Varech, Karlovy Vary, Czech Republic, T: Katerina Pavlasova
- PHYS007** **The Thermoelectrically Refrigerated Cloud Chamber**  
Antonin Badura, 19, Junior, School: Gymnazium Brno, Trida Kapitana Jarose, Prispevkova Organizace, Brno, South Moravian Region, Czech Republic, T: Tomas Necas
- PLNT004** **Identification of dsRNA Mycoviruses in Plant-Pathogenic Fungus *Fusarium oxysporum***  
Martin Matl, 18, Sophomore, School: Gymnazium Brno, Trida Kapitana Jarose, Prispevkova Organizace, Brno, Jihomoravsky Kraj, Czech Republic, T: Iva Kubistova
- Prague, CZE002, AMAVET Czech Republic Science Fair*
- BCHM006** **Pathogenic Yeast *Candida parapsilosis* and Its Carbonic Anhydrase**  
Jan Blaha, 18, Sophomore, School: Gymnazium a Stredni Odborna Skola Prelouc, Prelouc, Pardubicky Kraj, Czech Republic, T: Ing. Eva Kroft

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- EBED001** **Silicon Diode Spectrometer**  
Josef Gajdusek, 19, Senior, School: DELTA – Stredni Skola Informatiky a Ekonomie, Zakladni Skola a Materska Skola, S.R.O, Pardubice, Pardubicky Kraj, Czech Republic, T: Jiri Formanek
- MATH001** **Affine Planes, Projective Planes and Latin Squares**  
Jakub Novotny, 19, Junior, School: Gymnazium Brno-Reckovice, Brno, Jihomoravsky Kraj, Czech Republic, T: Iva Butorova
- DENMARK**  
*Copenhagen, DNK001, Unge Forskere*
- ENBM079** **Can of-CS and rVAR2 Methods Detect Early Stage Cancer?**  
Frederikke Moll Engesgaard, 20, Senior, School: Norresundby Gymnasium & HF, Norresundby, Nordjylland, Denmark, T: Thomas Clausen
- ENEV010** **Predicting Space Debris' Trajectory Through the Atmosphere**  
Esben Juel Porat, 20, Senior, School: Arhus Statsgymnasium, Aarhus, Jylland, Denmark, T: Jorn Laursen
- ENMC077T** **Developing a Bicycle Attached Device for Manipulating Riders' Attention for Increased Safety**  
Anders Osterby, 19, Junior, Vincent Olesen, 18, Junior, School: Odense Tekniske Gymnasium, Odense, Fyn, Denmark, T: Kirsten Frandsen
- EGYPT**  
*Cairo, EGY001, Cairo Science and Engineering Fair*
- EGCH032T** **Perovskite Tracking Solar Cell (PTSC)**  
Mohamed Khaled Othman, 17, Junior, Hossam Mostafa Ibrahim, 17, Junior, School: 6 of October STEM Egypt School, Giza, Egypt, T: Ahmed Towfiq
- ENEV042** **The Ideal Electricity System**  
Hossam Hassan Hassan, 17, Junior, School: S.T.E.M. Luxor School, Luxor, Egypt, T: Mostafa El Taher
- ENEV043T** **Integrated Recycling System**  
Ahmad Yasser EL Gazzar, 18, Senior, Abdelrahman Khaled Abdo, 18, Senior, School: STEM High School for Boys, 6 of October, Giza, Egypt, T: Ahmad Towfiq
- ENEV049T** **For Pure Life**  
Mohamed Gamal Nafe, 18, Junior, Ibrahim Mohamed Helmy Ali, 17, Junior, Schools: Red Sea STEM, Hurgada, Egypt, Dr. Yusuf Ismail Secondary, Nag Hammadi, Qena, Egypt, T: Khaled Mahmoud
- ENMC046T** **Algae Energy**  
Seifeldin Abdelmoneim Mohamed, 19, Senior, Dina Ahmed Abdelaal, 18, Senior, School: Suez Advanced Industrial School, Suez, Egypt, T: Shimaa Abdelwahab
- ROBO018** **Disability Breaker**  
Maikl Amged Ghaly, 16, Sophomore, School: Sohag Secondary Military School, Sohag, Egypt, T: Amged Yousef
- Alexandria, EGY002, BA Science and Engineering Fair*
- BEHA037** **Smart Museum**  
Peter Ibrahim Khalil, 18, Senior, School: Gamal Abd Al Nasser, Alexandria, Egypt, T: Eman Ghazy
- BMED066** **Potential Therapeutic Effect of Novel Multivitamins and Minerals Combination for Alzheimer's: *in vitro* and *in vivo* Studies**  
Ahmed Aly Sobhy, 18, Senior, School: Victoria College, Alexandria, Egypt, T: Doaa Ghareeb
- EAEV051T** **From Global Warming to Stronger Economy**  
Maha EL-Sayed Arafat, 18, Senior, Maysa Yasser Farag, 18, Senior, School: Maadi STEM School For Girls, EL-Maadi, Cairo, Egypt, T: Manal EL-Khadrawy
- EGCH026T** **Utilization of Water Hyacinth in Energy Production**  
Islam GamalElDein Abousamra, 17, Junior, Mahmoud Reda Darwish, 17, Junior, School: STEM School of Alexandria, Burj El-Arab, Alexandria, Egypt, T: Mohamed Hefny

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**ESTONIA***Tallinn, EST001, Estonian Young Scientist Contest***EAEV058 Detection of Built-Up Areas from ERS-2, Envisat and Sentinel-1 Synthetic Aperture Radar Data**

Eva-Maria Tonson, 20, Senior, School: Hugo Treffner Gymnasium, Tartu, Tartumaa, Estonia, T: Kaupo Voormansik

**ENEV013 Signal Buoy**

Hans Anniste, 18, Junior, School: Poltsamaa Co-Educational Gymnasium, Poltsamaa, Jogevasmaa, Estonia, T: Urmas Kuusik

**FINLAND***Helsinki, FIN001, Finland National Science & Engineering Fair***SOFT034T Encryption in Everyday Life**

Joel Toivo Tapio Jakko, 18, Junior, Max Mecklin, 18, Junior, School: Valkeakosken Tietotien Lukio, Valkeakoski, Pirkanmaa, Finland, T: Merikki Lappi

**SOFT040T Pyco: An Algorithmic Composer**

Iikka Hauhio, 19, Senior, Lassi Olavi Kaimio, 19, Senior, School: Maunulan Yhteiskoulu ja Helsingin Matematiikkalukio, Helsinki, Uusimaa, Finland, T: Ville Tilvis

**SOFT043T Working Safety-Application**

Aukusti Tuomas Parikka, 16, Freshman, Eemil Kristian Rintala, 16, Freshman, School: Saynatsalon Yhteinaiskoulu, Jyväskylä, Central Finland, Finland, T: Merja Jokinen

**FRANCE***Paris, FRA001, Olympiades de Physique***EAEV002T Study and Modeling of Pressure and Temperature During a Geyser Eruption**

Jean-Baptiste Flieller, 18, Senior, Elias Suvanto, 18, Senior, School: Gymnase Jean Sturm, Strasbourg, Alsace, France, T: Franck Lohner

**GEORGIA***Tbilisi, GEO001, Georgian Science Project Olympiad***MATH018T Cylindrical Deformation of Triangles**

Nano Modosiani, 17, Sophomore, Mariam Bughadze, 16, Sophomore, School: Georgian-American School, Tbilisi, Georgia, T: Ia Mebonia

**MATH019T Ideal k-Surface**

Sandro Museliani, 15, Freshman, Nia Baramadze, 16, Sophomore, School: Georgian-American School, Tbilisi, Georgia, T: Ia Mebonia

**PLNT012T Polyphenols in Georgian Grapes**

Giorgi Tabagua, 18, Junior, Ketevan Tkeshelashvili, 17, Junior, School: Georgian-American School, Tbilisi, Georgia, T: Medea Toloraia

**SOFT012 Security from DDOS**

Revaz Epadze, 16, Sophomore, School: Georgian-American School, Tbilisi, Georgia, T: Alexander Muller

*Tbilisi, GEO002, Leonardo da Vinci Fair***BMED007T Development of New Generation "Live" Food Products Based on Rational Use of Georgia's Raw Resources**

George Pkhakadze, 18, Senior, Maria Eradze, 18, Senior, Schools: Georgian-American School "Progress," Niko Nikoladze School, Kutaisi, Imereti, Georgia, T: Sopho Gachechiladze

**EGPH005T Innovative Technology of Increasing Solar Cells' Efficiency**

Giorgi Nioradze, 18, Senior, Vakhtang Kontridze, 18, Senior, School: AIA-GESS, Tbilisi, Qvemo Qartli, Georgia, T: Teimuraz Chichua

**EGPH008T Solar Panel Deployable Light Reflector Innovating Construction**

Beqa Mikadze#, 18, Senior, Giorgi Margiani#, 19, Senior, Schools: AIA-GESS, Akhali Litseumi, Tbilisi, Georgia, T: Teimuraz Chichua

**ROBO005T Self-Adapting Machines on Basis of Microcontroller**


Aleksandre Khokhiashvili#, 17, Junior, Tamar Korkotashvili, 15, Freshman, Dimitri Korkotashvili#, 16, Sophomore, School: LPPL Vladimer Komarovi Tbilisi Physics and Mathematics No. 199 Public School, Tbilisi, Georgia, T: Irakli Khokhiashvili

**GERMANY**

*Paderborn, DEU001, Jugend Forscht*

- CHEM001T Red as Blood: Development of a Low-Temperature Synthesis for Alpha-Aluminium Oxide-Based Gemstones**  
 Friedrich Wanierke, 19, Senior, Christian Scharf, 20, Senior, Paul Rathke, 20, Senior, School: Albert-Schweitzer-Gymnasium, Erfurt, Thuringen, Germany, T: Uta Purgahn
- EBED003T A.T.S.P. (Autonomic Thermal Soaring Platform)**  
 Florian Andre Vahl, 18, Senior, Etienne Philippe Neumann, 18, Senior, Friedrich Maximilian Schiller, 18, Senior, School: Johannes-Brahms-Schule, Pinneberg, Schleswig-Holstein, Germany, T: Lars Klettke
- ENBM003 Identifying Bacteria with "Fingerprints" Based on Laser Diffraction Patterns**  
 Katarina Barbara Chapman, 18, Senior, School: Gymnasium Hochrad, Hamburg, Germany, T: Lena Brinkhoff
- ENMC002 Design and Production of an Innovative, Interactive Augmented Reality Projector**  
 Tobias Gerbracht, 20, Senior, School: Carl-Fuhlrott-Gymnasium, Wuppertal, Nordrhein-Westfalen, Germany, T: Michael Winkhaus
- ENMC003 A Wing Is Enough: An Improved Flying Wing Based on a Bell-Shaped Lift Distribution**  
 Ivo Zell, 19, Senior, School: Internatsschule Schloss Hansenberg, Geisenheim-Johannesberg, Hessen, Germany, T: Michael Ostertag
- MATS003 Ion-Solid Interactions on the Nanoscale**  
 Julia Sophie Graupner, 20, Senior, School: Carl-Zeiss-Gymnasium, Jena, Germany, T: Carsten Ronning
- PHYS002T Big Bang Pickle**  
 Hannes Hipp, 19, Senior, Sonja Maria Elisabetha Gabriel, 18, Senior, Schools: Studienkolleg St. Johann Blonried, Aulendorf, Storck-Gymnasium, Bad Saulgau, Baden-Wurttemberg, Germany, T: Tobias Beck

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**ROBO001 Drone Defense System: Detection, Tracking, Classification and Targeting of Flight Objects in 3D and Real Time**

Tassilo Constantin Schwarz, 18, Senior, School: Johannes-Heidenhain-Gymnasium Traunreut, Traunreut, Bayern, Germany, T: Markus Weich

**SOFT003 My ePass: Your Digital Identity**

Stefan Nikolaev Genchev, 18, Junior, School: Galabov-Gymnasium, Sofia, Germany, T: Matthias Hefner

**GHANA**

Accra, GHA001, MISE Research Program

**EBED043 Gas Detector Alarm System**

Peter-Newman Giffa Messan, 17, Junior, School: Ghana Christian International High School, Accra, Greater Accra, Ghana, T: Samuel Amoako-Frimpong

**GUAM**

Mangilao, TEGU01, Guam Island-Wide Science Fair

**ENMC062 Neolithic Engineering in the 21st Century: An Innovative Design Using the Ball-and-Socket Model to Mitigate Seismic Effects on Contemporary Pacific Structural Designs**

Youngyoon Seo, 17, Junior, School: Saint John's School, Upper Tumon, Guam, T: Arlene Chua

**HUNGARY**

Budapest, HUN001, Innovation Contest for Young Scientists

**SOFT005 Mutasd!: Interactive Software for Learning and Practicing Sign Language**

Roland Krisztian Horvath, 16, Sophomore, School: Szechenyi Istvan High School, Sopron, Hungary, T: Agota Lang

**INDIA**

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

**BCHM029T A Novel Iso-Enzyme Based Dot Blot Strip Test for Rapid Detection of Multiple Insecticide Residues**

## Divya Kranthi#, 17, Junior, Suhani Sachin Jain#, 17, Junior, Schools: Ambedkar College, Taywade College, Nagpur, India, T: Sandhya Kranthi

**CBIO051T A Real-Time Predictive Modelling for Mitigation of Contagious Diseases – A Mathematical Approach**

Samriddhi Vishwakarma, 16, Sophomore, Shresth Agrawal, 16, Sophomore, School: Bharatiya Vidya Bhavans RK Sarda Vidya Mandir, Raipur, Chhattisgarh, India, T: Sushil Pandey

**EAEV088 An Innovative Crowdsourcing Approach to Monitoring Freshwater Bodies**

Sahithi Rohini Pingali, 17, Junior, School: Inventure Academy, Bengaluru, Karnataka, India, T: Mary Raj

**EBED046T ThumbFi: Control All Your Devices with Your Fingertips**

Sarthak Sethi, 18, Senior, Mohd Faiz Lnu, 18, Senior, Schools: Maxfort School Dwarka, Daisy Dales Senior Secondary School, New Delhi, India, T: Ajeet Panwar, Mohd. Itqan Ullah

**EBED047 Eco-Phone: A Future Safe Phone with Visible Light and Infrared Communication**

Mohammed Sharief, 18, Senior, School: St. Aloysius Pre-University College, Mangalore, Karnataka, India, T: Raghavendra Shetty

**EGCH048T Enhancement of the Behavior of a Species of NiHcd HER Electrode Using a Stable Ni(OH)<sub>2</sub>-NiOOH Phase Transformation Redox Mediator in a Developed-Two-Step Alkaline Electrolysis Process Under Variable Current Densities**

Jaskaran Singh Sethi, 17, Senior, Aparimeya Taneja, 17, Senior, School: St. Columba's School, New Delhi, India, T: Jaspreet Sethi

**EGPH040T Multi Axial Motion Unifying Gear Arrangement to Capture Wave and Other Random Run Away Energy**

Sairandri Sathyanarayanan, 17, Senior, Sacheth Sathyanarayanan, 16, Junior, School: National Public School, Chennai, Tamil Nadu, India, T: Philomin Joshie



- ENBM074T** **A Real-Time Vein Imaging System Using Image Processing Algorithms on Images Obtained from a Standard Smartphone Camera**  
 FNU Chaitanya, 18, Senior, FNU Geeve, 18, Senior, School: Little Rock Indian School, Udupi, Karnataka, India, T: Sona Fernandes
- ENEV074** **Biodegradation of Chlorpyrifos and Soil Remediation Using Native Soil Bacteria and Triton X-A Novel Approach**  
 # Prashaant Ranganathan, 18, Junior, School: Carmel Junior College, Jamshedpur, Jharkhand, India, T: Paramjeet Kaur
- MATH051T** **Generation, Construction, Matches: An Analysis of n-Sided Dice**  
 Shamay G. Samuel, 18, Senior, Renasha Mishra, 18, Senior, School: Delhi Public School R.K. Puram, Delhi, New Delhi, India, T: Neelam Kataria
- MATS072** **A Novel Corrosion Resistant Composite Material Developed from LPDE Waste Plastic and GGBFS (Ground Granulated Blast Furnace Slag)**  
 Swasthik Padma, 16, Sophomore, School: Vivekananda English Medium School, Dakshina Kannada, Karnataka, India, T: Sharada Shetty
- PLNT058T** **CAgel Accelerated Tyrosine Pathway to Combat Leukotrichia**  
 Tanya Goyal, 17, Senior, Harsh Jain, 17, Senior, School: Maharaja Agarsain Public School, Delhi, India, T: Ritu Gupta
- PLNT059** **A Novel Strategy Using Amino Acids as Elicitors to Combat Pathogenicity Caused by *Alternaria solani* on Selected Crops**  
 Prakruthi R U Kumar, 16, Sophomore, School: Army Public School, Parachute Regiment Training Centre, Bangalore, Karnataka, India, T: Ravikumar B. S.
- PLNT061T** **Innovative Method of Raising Paddy Seedlings by an Economically Viable and Ecologically Sustainable Method: A Boon to Farmers**  
 Siva Bharathi Anbu Bharathi, 14, Freshman, Ramkumaar Ekambaram Thondaiman, 15, Freshman, School: NSN Matriculation Higher Secondary School, Chennai, Tamil Nadu, India, T: Shantha Devanathan
- ROBO040** **The Universal Learning Lab – NLU, ASR and AI Enabled Voice and Text Based Research/Mini Lab**  
 Sayli Pankaj Bande, 14, Freshman, School: J.S.S. Public School, Bangalore, Karnataka, India, T: Pankaj Bande

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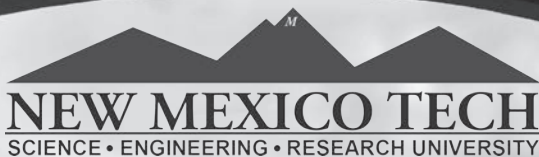
f t i

- ROBO041** **Cyclos: Preventing Low Back Pain Among Cyclists Using the Autoregressive Model with a Real-Time Feedback Mechanism**  
Kunj Siddharth Dedhia, 18, Senior, School: Dhirubhai Ambani International School, Mumbai, Maharashtra, India, T: Asha Sundararajan
- ROBO042** **TACo: Think And Converse–Brain-Actuated Aids for the Disabled Using Improved Electroencephalographic Techniques**  
Manan Rai, 18, Senior, School: Amity International School, Pushp Vihar, New Delhi, India, T: Parul Talwar
- SOFT051** **Using Bayesian Networks and Entropy Coding for High Fidelity Video Compression**  
Rochan Venkat Avlur, 18, Senior, School: AECS Magnolia Maaruti Pre-University College, Bangalore, Karnataka, India, T: Chandrasekar Vaidyanathan
- SOFT052** **Language Identification Based on the Variations in Intonation Using Multi-Classifiers Systems**  
Shinjini Ghosh, 17, Junior, School: South Point High School, Kolkata, West Bengal, India, T: Partha Pratim Roy
- TMED053** **Celiac Disease Treatment: Mitigating Gluten Intolerance Using Punarnavine**  
Tushar Aggarwal, 18, Junior, School: Maharaja Agarsain Public School, Delhi, India, T: Shallu Gupta

**INDONESIA***Jakarta, IDN001, Youth Science Competition*

- ANIM024T** **Why Can House Gecko (*Cosymbotus platyurus*) Be Found in Your House? The Study Correlation of *Cosymbotus platyurus*'s Lamellar Adhesion on the Level of Surface Roughness Through Behavioral Observation**  
Chyntia Silvi Yanti Hasan, 17, Junior, Zahratul Jannah, 18, Senior, School: State Senior High School 80 Jakarta, Jakarta, DKI, Indonesia, T: Bayu Satriawan
- BEHA056** **Neglected Children: Case Study of Public Attitudes toward Children with HIV AIDS in 6 (Six) Sub-Districts in Surakarta**  
Latifah Maratun Sholikhah, 17, Senior, School: State Senior High School 1 Teras, Boyolali, East Java, Indonesia, T: Kunto Susatyawan
- EAEV078** **Bamboo Forest as a Natural Levee of Pyroclastic Flows in Merapi Volcano**  
Azizah Dewi Suryaningsih, 18, Senior, School: State Senior High School 1 Yogyakarta, Yogyakarta, DI Yogyakarta, Indonesia, T: Rudi Prakanto
- EGCH037T** **Natural Dye of Red Dragon Fruit (*Hylocereus costaricensis*) Peel Extract for Dye Sensitized Solar Cells (DSSC) Application**  
Miranti Ayu Kamaratih, 19, Senior, Octiafani Isna Ariani, 19, Senior, School: Al Hikmah Senior High School, Surabaya, East Java, Indonesia, T: Nur Indriani
- ENEV063T** **Bangka's Tin Sea Sand-Fe3O4 as a Removal of Heavy Metals in By-Product of Tin Ore Processing**  
Shofi Latifah Nuha Anfaresi, 17, Senior, Intan Utami Putri, 17, Senior, School: State Senior High School 1 Sungailiat, Sungailiat, Bangka, Bangka Belitung, Indonesia, T: Sri Handayani
- TMED017T** **Toxicity and Gastroprotective Activity of Taro Stem Extract (*Colocasia esculenta L. Schott*) in Acetylsalicylic Acid-Induced Gastric Mucosal Injuries in Rats**  
Aiman Hilmi Asaduddin, 18, Senior, Muhammad Farhan, 19, Senior, School: State Senior High School 1 Yogyakarta, Yogyakarta, DKI, Indonesia, T: Rudi Prakanto
- Jakarta, IDN002, Olimpiade Penelitian Siswa Indonesia*
- EAEV079T** **Scientific Wisdom Behind Yogyakarta Palace's Sustainable Resilience to Natural Hazards**  
Najmuna Ratri Lakshita, 18, Senior, Sakina Yaumul Fitri, 19, Senior, School: SMA Negeri 1 Yogyakarta, Yogyakarta, D. I. Yogyakarta, Indonesia, T: Rudy Prakanto
- EBED034T** **Smart Digital Psychrometer for Forecasting Local Weather**  
Made Radikia Prasanta, 17, Junior, Bagus Putu Satria Suarima Putra, 17, Junior, School: SMA Negeri Bali Mandara, Buleleng, Bali, Indonesia, T: Kadek Artama
- MATS055** **Novel Anti-Radiation Polypropylene-Eggshell Composite**  
Tri Ardiansa, 18, Junior, School: SMA Negeri 3 Semarang, Semarang, Central Java, Indonesia, T: Agus Priyatno

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**IRAQ***Erbil, IRQ001, INPO (Iraq National Project Olympiad)***CHEM070T Green Synthesis of Biological Magnetic Eggshell Nanocomposite and Investigation of Its Magnetic Properties**

Tavga Badrkhan Ezzat, 17, Sophomore, Mardin Majroom Dino, 17, Sophomore, Tavga Badrkhan Ezzat Beg, 17, Sophomore, School: Soran Ishik High School, Soran, Iraq, T: Yasemin Kalemli

**ENMC079T Transparent Side**

Mohammed Zaki Hamid Jabir ALJubori, 18, Junior, Mousa Ghassan Rajab ALJawaheri, 17, Junior, School: Baghdad Ishik Boys College, Baghdad, Iraq, T: Ibrahim Yazici

**MATH055 Polygon Triangulation Problem**

Saya Haydar Qader, 19, Junior, School: Nilufer High School, Arbil, Iraq, T: Dilek Arslan

**IRELAND***Dublin, IRL001, BT Young Scientist & Technology Exhibition***PHYS058 Case Study of Data Mining in Observational Astronomy: The Search for New OB Stars in the Small Magellanic Cloud**

Cormac James Larkin, 20, Senior, School: Colaiste an Spioraid Naoimh, Cork City, Munster, Ireland, T: Tim Kerins

*Local, Regional and National (Dublin), IRL002, SciFest***BMED033 Hum Your Way to Better Health to Investigate Through Research and Experimentation: The Effect of Nasal Breathing and Meditative Humming Techniques on Lung Function**

Caolann Ellen Brady, 18, Senior, School: St. Wolstan's Community School, Celbridge, Leinster T: Karen O'Callaghan

**ISRAEL***Jerusalem, ISR001, The Israeli Young Scientists Contest***BEHA042 The Black Plague and the Conception of Death**

Noga Yekutieli, 18, Senior, School: Israel Arts and Science Academy, Jerusalem, Israel, T: Yael Justus Segal

**CHEM029 Controlling the Photocatalytic Activity of Hybrid Thin Films of Titanium Ethylene Glycol (Ti-EG) by Modifying the Thermal Annealing Conditions**

Hadar Rahav, 18, Senior, School: The Israel Arts and Sciences Academy (IASA), Jerusalem, Israel, T: Guy Ashkenazi

**ENBM057T Real Time Monitoring of Mechanical Heart Valves**

Dekel Roth, 18, Senior, Ariel Adar, 18, Senior, School: Ort Grinberg Kiryat Tiv'on, Kiryat Tiv'on, Israel, T: Oren Lamdan

**MATH038 Orthogonal Polynomials and the Two Dimensional Nevai Condition**

Gonen Zimmerman, 17, Junior, School: Kfar Hayarok High School, Ramat HaSharon, Center, Israel, T: Shira Hirsh

**MATS031 Co-Assembled Ultra Strong Hydrogel as a Potential Scaffold for Tissue Engineering**

Rina Sevostianov, 18, Senior, School: Makif Gimel Ashdod, Ashdod, Israel, T: Tomer Cohen

**ITALY***Milano, ITA001, I Giovani e le Scienze***CHEM045T Curcumin: Molecule which Captures Heavy Metals**

Gloria Cascio, 19, Senior, Elena Sparaciari, 19, Senior, Romina Paolucci, 19, Senior, School: Istituto Istruzione Superiore Galileo Galilei, Jesi, Ancona, Italy, T: Edgardo Catalani

**EAEV060 Water Potability Device (W.P.D.)**

Eros Pegolo, 19, Senior, School: I.S.I.S. Malignani Udine, Udine, Italy, T: Eliana Ginevra

**EBED031 LaserWAN: Laser Broadband Internet Connections**

Valerio Pagliarino, 17, Junior, School: I.I.S. Nicola Pellati, Nizza Monferrato, Asti, Italy, T: Giuseppina Bogliolo

**JAPAN**

Tokyo, JPN001, Japan Students Science Awards

**ANIM040 Red and Blue Silk Threads Obtained from Silkworms Reared on Artificial Diets Containing Rhodamine B and Methylene Blue**

Nodoka Fukumitsu, 19, Senior, School: Shimane Prefectural Masuda High School, Masuda, Shimane, Japan, T: Susumu Fukumitsu

**ANIM041T Differentiation of Song Patterns of the Cicada *Meimuna opalifera*'s Possible Effects of Ancient Pyroclastic Flow**

Souma Taguchi, 18, Junior, Eriko Tanda, 17, Junior, Yuki Matsushita, 18, Junior, School: Kagoshima Prefectural Kokubu High School, Kirishima City, Japan, T: Katsuki Komizo

**EAEV065T Estimation of the Humidity in the Upper Troposphere Using Contrails Formed by Airplanes**

Shio Furueda, 18, Senior, Mizuki Koshita, 18, Senior, Hinata Koizumi, 17, Senior, School: Aomori Prefectural Aomori Minami Senior High School, City Aomori Prefecture, Japan, T: Tomoki Abe

**ENMC050 Energy Saving SwimFin: Developing the Optimal Fin for Faster and Efficient Swimming**

# Yuki Hayakawa, 17, Sophomore, School: Kyoto Municipal Tonan High School, Kyoto, Japan, T: Hajime Motoya

**ENMC051 Feedback Control of Driverless Buses**

Taiga Yanagida, 17, Sophomore, School: Tamagawa Academy, Machida, Tokyo, Japan, T: Kojiro Tabaru

**ENMC052 A Wooden CNC from Scratch: The True Established Mechanisms by Three Elements – Technology, Electronics and Software Are Out There!**

Tadashi Nishimiya, 16, Sophomore, School: Kokura High School, Kitakyushu, Fukuoka, Japan, T: Akiyoshi Ide




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Tokyo, JPN002, *Japan Science & Engineering Challenge*

- ANIM018T** **Water Surface Vibration Signals Utilized by the Japanese Water Strider, *Aquarius elongatus*, to Locate Prey and Mate**  
Aya Nobe, 18, Senior, Norika Kondo, 18, Senior, Sachiko Fukuzawa, 17, Senior, School: Nagasaki Prefectural Nagasaki Nishi High School, Nagasaki-city, Nagasaki-pref., Japan, T: Tetsuya Nagashima
- EBED012** **Automatically Reproducing Live Performances of Violins via Novel Sound-Post Controlled Electrification**  
# Aito Tanaka, 18, Senior, School: Hiroshima University High School, Fukuyama, Fukuyama-city, Hiroshima-pref., Japan, T: Akiyoshi Kai
- EGCH008** **Artificial Photosynthesis: Novel Visible Light Response and Formic Acid Generation from Carbon Dioxide Using Tantalum Oxide/Tantalum Plate**  
Huiyi Wu, 18, Junior, School: Ichikawa Gakuen Ichikawa High School, Ichikawa-city, Chiba-pref., Japan, T: Tetsuto Nakashima
- ENMC019** **Single and Simple Groove Addition Improves Propeller Efficiency**  
Kotaro Tabuchi, 18, Senior, School: Nanzan Boys' Senior High School, Nagoya-city, Aichi-pref., Japan, T: Kazumasa Okuoka
- MATS017T** **Alumiracle: Coloring Anodized Aluminum with Natural Dyes**  
Rika Kaminishi, 19, Senior, Satoe Tayama, 18, Senior, School: Chiba Prefectural Sakura High School, Sakura-city, Chiba-pref., Japan, T: Yuki Shiga
- PHYS019T** **Experimental and Numerical Investigation of Relation Between Color and Thickness of Extremely Thin Soap-Bubble Films**  
Mai Inden, 18, Senior, Arisa Kikuri, 16, Junior, School: Aichi Prefectural Ichinomiya Senior High School, Ichinomiya-city, Aichi-pref., Japan, T: Ichirou Kawaguchi

#### JORDAN

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

- BEHA021** **EWS "Express without Stress"**  
Tala Amjed Haddad, 17, Junior, School: Jubilee School, Amman, Jordan, T: Hazem Hamdan
- CHEM023T** **Leading the Environment with Less Lead, Nano-Structured Jordanian Kaolinite for The Removal of Lead From Industrial Waste Water**  
Bayan Osama Abu Alragheb, 17, Junior, Ayah Hayel Shehadeh, 17, Junior, School: Al-Hasaad Al-Tarbawi School, Amman, Jordan, T: Roweida Abushusheh
- EBED011** **Smart Seniors Care**  
Raad Amer Kloob, 15, Freshman, School: Al-Omaryah Schools, Amman, Jordan, T: Afnan Ali
- EGCH014** **Thermoelectric Dry Energy**  
Yousef Zaid Alnawafleh, 16, Sophomore, School: Wadi Musa Primary School, Wadi Musa, Jordan, T: Ali Alshboul
- EGPH011** **WWAG: Walk, Warm, and Generate**  
Omar Mohammad Nassar, 16, Sophomore, School: Islamic Educational College, Amman, Jordan, T: Afnan Ali
- EGPH012T** **A Unique Solar System that Captures the Heat Energy of the Sun in an Efficient Way**  
Rakan Raed Nasereddin, 17, Junior, Tamer Shibley Al-Haddadin, 17, Junior, School: Modern Montessori School, Amman, Jordan, T: Eman Asad
- ENEV018T** **A Magnetic Brush that Cleans Solar (PV) Cells from Dust and Sand without the Use of Water and Electricity**  
Zaid Riyad Alatiyat, 17, Junior, Omar Ahmad Ahmad, 17, Junior, School: Modern Montessori School, Amman, Jordan, T: Eman Asad
- ENEV019T** **Using Physics in Withdrawing and Purifying Air without Human Intervention**  
Sanad Saleh Alkiswani, 17, Junior, Beshar Nijm Aldabbagh, 16, Junior, School: Al-Hasaad Al-Tarbawi School, Amman, Jordan, T: Nour Aldin Al Hourani
- ENEV020** **Recycling of Cement Kilns Dust (CKD) to Improve the Mechanical Properties of the Base Course Layer in Highways**  
Ban Ayoup Ghrair, 15, Freshman, School: Al-Hussein Preparatory School for Girls–UNRWA, Amman, Jordan, T: Ayoup Ghrair



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- ENEV026T** **Chemically Modified Jordanian Zeolitic Tuff for Removal of Heavy Toxic Metals from Industrial Water**  
Hala Basheer Almajali, 17, Junior, Tala Maen Mesmar, 17, Junior, School: Jubilee School, Amman, Jordan, T: Akl Awwad
- PHYS041** **Laser Shielding Odyssey: A Novel Method for Confining Matter Transported at Relativistic Velocities in Vacuum by a Laser-Tube, Which May Solve a Problem of Stephen Hawking's "Star-Shot" Initiative**  
# Dana Yahia Arabiyat, 18, Senior, School: Alridwan Schools, Amman, Jordan, T: Asaad Sakhel
- PLNT025T** **The Lethal Effect of the Peppermint Oil on the White Fly**  
Farah Bassam Al Shloul, 17, Junior, Lana Saed Mughrabi, 17, Junior, School: Umm Al-Summaq Secondary School, Amman, Khalda, Jordan, T: Saida Bteibet
- KAZAKHSTAN**  
*Astana, KAZ001, DARYN National Junior Science Projects Competition*
- PLNT008** **Essential Oil of Some Species of the Family Asteraceae Dumort East Kazakhstan**  
Rodion Yurievich Ivashchenko, 19, Junior, School: High School #38 for Gifted Children, Ust-Kamenogorsk, Vostochno-Kazakhstanskaya, Kazakhstan, T: Snezhanna Molostova
- SOFT009T** **Protium: A Future of Web-Development**  
Ruslan Jankurazov, 16, Junior, Dmitriy Ussoltsev, 17, Junior, School: Republican School in Physic and Math after Zhautykov, Almaty, Kazakhstan, T: Gulnur Aubakirova, Arkhat Dollayev
- KENYA**  
*Nairobi, KEN001, Kenya Science and Engineering Fair*
- ENBM075T** **Nanopatterned Polystyrene Polymer with Bactericidal and Bacteriostatic Properties Against *Salmonella enterica* ATCC 43975 and *Bacillus cereus* ATCC 14579**  
Nishant Laxmikant Vekaria, 16, Sophomore, Mansi Navin Hirani, 15, Sophomore, School: Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya, T: Laban Chweya
- ENEV075T** **Activated Carbon: Houseplant System as a Low Cost Method of Air Purification for Improving Indoor Air Quality in Urban and Suburban Areas in Kenya**  
Zeel Yogeshkumar Patel, 16, Sophomore, Priyen Devraj Pindoria, 15, Freshman, School: Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya, T: Laban Chweya
- MATS069T** **A Composite Material Made from Wastes of Glass, Polymers and Industrial Rubber as a Waste Management Initiative in Urban and Sub-Urban Areas in Kenya**  
Mitesh Lalji Varsani, 16, Sophomore, Bilhah Nyaboke Ontiriah, 17, Sophomore, School: Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya, T: Laban Machoka
- TMED054T** **Conjugated Linoleic Acid, Kefiran and Interferon Beta-1a's Anti-Proliferative and Anti-Carcinogenic Effects *in vitro* BT-474 (ATCC® HTB-20™) Cell Lines for Breast Cancer Treatment**  
Tejashvi Pravin Pindoriya, 16, Sophomore, Vinita Kanwar Rathore, 15, Sophomore, School: Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya, T: Laban Chweya
- KUWAIT**  
*Kuwait, KWT001, Kuwait Science and Engineering Fair*
- BMED043** **Blood Types Identification Using Photons**  
Zainab Bader Alnakkas, 17, Junior, School: Bayan High School for Girls, Bayan, Kuwait, T: Hussam Riad
- ENBM033** **Diagnosing Tumours Using fNIR Imaging System**  
Khaled Saud Alhwaishel, 19, Senior, School: Kuwait National English School, Hawally, Kuwait, T: Eman Atef



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**TMED025** **Anti Proliferative and Apoptotic Effects of Acidified Sodium Chlorite on Osteosarcoma SJSa-1 and MDA-MB-231 in vitro**  
Modhi Alajmi, 17, Junior, School: American Creativity Academy, Hawalli, Kuwait,  
T: Eman Etef

## LUXEMBOURG

*Luxembourg, LUX001, Concours Jeunes Scientifiques Luxembourg*

**BMED067T** **Omega-3 ALPHA-Linolenic Fatty Acid in Chia Seeds (*Aalvia hispanica L.*) and Its Influence on Human Performances**

Lavinia Marie Kadar, 17, Junior, Ines Bahlawane, 17, Junior, School: Ecole Europeene Luxembourg 2 Mamer, Bertrange, Luxembourg, T: Eric Castanet

**MATS061** **The Role of Materials and Surfaces in the Transmission of Bacteria in Public Places**

Camilla Hurst, 17, Junior, School: European School Luxembourg 1, Luxembourg, T: Martin Bennett

## MALAYSIA

*Federal Territory Putrajaya, MYS001, National Schools Science Innovation and Engineering Competition*

**CHEM004T** **Caffeine Termiticide: Caffeine as a Novel and Eco-Friendly Termiticide**

Zhan Yi Chng, 17, Junior, Xian Jing Koay, 17, Junior, School: Chung Ling High School, Kampung Baru, Penang, Malaysia, T: Whey Cheng Heah

**CHEM030T** **Saponin Anti Larvae Treatment (S.A.L.T)**

Raul Ram Vimal Kumar, 16, Sophomore, Norman Sim, 16, Sophomore, School: Penang Free School, Penang, Georgetown, Malaysia, T: Siti Rahimah Jusop

**EAEV003** **Durio Plastico**

Munirah Suhada Mahdzir, 17, Senior, School: Sekolah Menengah Kebangsaan Buloh Kasap, Segamat, Johor, Malaysia, T: Nurmiza Misman

**MATS008** **The Revolution of Plastic**

# Joel Lee Zher Jong, 17, Junior, School: Sekolah Menengah Kebangsaan Batu Lintang, Kuching, Sarawak, Malaysia, T: Yee Chuen Lim

**TMED004** **Sabah Snake Grass: Nature's Way of Healing**

# Isaac Chung De Wei, 17, Junior, School: SMK Batu Lintang, Kuching, Sarawak, Malaysia, T: Yee Chuen Lim

**TMED009T** **Multisensory Sleep Enhancer and Regulator**

Kai Bo Lee, 17, Senior, Felix D' Marvin, 17, Senior, Muhammad Akram Bin Ahmad, 17, Senior, School: Sekolah Menengah Kebangsaan Ibrahim, Sungai Petani, Kedah, Malaysia, T: Mahamad Hj Abdul Hamid

*Kuala Lumpur, MYS002, MRSM Young Scientist*

**EGCH015T** **Hydrogen Fuel Cell: Titania Nanotubes as Photoanode**

Zaiyani Binti Bahari, 17, Junior, Farah Nurshahira Binti Mohd Solehin, 16, Sophomore, School: Mara Junior Science College Kubang Pasu, Jitra, Kedah, Malaysia, T: Kamal Harmoza Bin Kamal Ariff

**TMED026** **The Cytotoxicity Effect of *Nepelium lappaceum* Leaf Extract on Human Cancer Cells**

Farhah Nabilah Rosli, 17, Junior, School: Batu Pahat MARA Junior Science College, Batu Pahat, Johor, Malaysia, T: Zaiton Abdullah

## MEXICO

*Mexico City, MEX002, Feria Nacional de Ciencias e Ingenierías-CONACYT*

**ANIM004T** **Effect of the Survival Rate of Postlarvae Crayfish, *Cambarellus montezumae*, in Its Aquaculture Production**

Agustin Diaz Lorenzo, 18, Junior, Francisco Jesus Mota Rojo, 18, Junior, School: Centro de Estudios Tecnologicos en Aguas Continentales No. 2, Tezontepec de Aldama, Hidalgo, Mexico, T: Ana Ceron Ortiz

**BCHM007T** **Microbiological Quality in Popular Foods**

Maria Fernanda Suarez Hernandez, 17, Junior, Viviana Guadalupe Cisneros Sumarraga, 18, Junior, Estephani Aylin Cervera Mendez, 18, Junior, School: Centro Educativo Antonio Betancourt Perez, Merida, Yucatan, Mexico, T: Silvia Arjona Díaz

- BEHA006T RApp Chemistry**  
 Juan Carlos Munoz Bojorquez, 18, Senior, Diana Alejandra Hurtado Plata, 18, Senior, School: Centro de Bachillerato Tecnológico Industrial y de Servicios Number 37, Obregon, Sonora, Mexico, T: Maria Martinez Tea
- BEHA057T Successful People Attitudes in Young People Actions**  
 Luis Angel Ramos Hernandez, 14, Freshman, Luis De La Luz Sanchez, 17, Freshman, Schools: Carlos Monsivais, Universidad Interamericana, Puebla, Cholula, Mexico, T: Gloria Mendoza Morales
- CHEM003T Formulation of a Coating for Tablets Based on Carboxymethylcellulose of *Opuntia spp.***  
 Maria Guadalupe Blancas Najera, 17, Freshman, Ivan Emmanuel Cordova Rivera, 18, Junior, Vianney Zulem Fernandez Valencia, 18, Junior, School: Preparatoria Oficial No.19 San Martin De Las Piramides, San Martín de las Piramides, Mexico, T: Hector Juarez Martinez
- CHEM059T Photocatalytic Ceramic Paint to Purify Air**  
 Jesus Alfonso Martinez Aranda, 18, Junior, Fernando Miguel Sanchez Villalobos, 18, Junior, Jose Manuel Elizalde Esparza, 18, Junior, School: Preparatoria 16, San Nicolas de los Garza, Nuevo Leon, Mexico, T: Marcela Rosas del Real
- EBED026 Smart Garden**  
 Frida Sofia Andrade Sierra, 18, Senior, School: Colegio de Estudios Científicos y Tecnológicos del Estado de Queretaro, Corregidora, Queretaro, Mexico, T: Aldo Rico Martinez
- ENEV003 Development of a Less Expensive Method for Radon Measurements**  
 Jose Alfredo Ocegueda Sanchez, 20, Senior, School: Centro de Enseñanza Técnica Industrial, Tonalá, Jalisco, Mexico, T: Jose Gonzalez Moreno
- ENEV011 Alternatives of Bioremediation in the Management Waste of CETMAR 08**  
 Miriam Sugrey Romero Osuna, 18, Senior, School: Centro de Estudios Tecnológicos del Mar 08, Mazatlán, Sinaloa, Mexico, T: Alexis Romero Osuna



**Emmy**  
 Future Disney  
 Imagineer



**Conrad**  
 Future Explosives  
 Expert



**Vanessa**  
 Future Emergency  
 Room Doctor



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**MATS006****ESCOMBLOCK (Block Based on Debris)**

Yosselin Rodríguez Cuevas, 19, Senior, School: Centro de Bachillerato Tecnológico Industrial y de Servicios No. 132, Hermosillo, Sonora, Mexico, T: María Guilebalda Gurrrola Rubio

**MATS007T****ACON (Concrete Organic Additive Based on *Opuntia ficus*)**

Jasai Jahdai Rodríguez Rivera, 18, Senior, Francisco Javier Rivas Cebreros, 19, Senior, School: Centro de Bachillerato Tecnológico Industrial y de Servicios No. 132, Hermosillo, Sonora, Mexico, T: María Gurrrola Rubio

**MCRO001T****Use of Phosphorus Solubilizing Bacteria with Application in Agriculture**

Misael Alexander Valenzuela Zuniga, 17, Junior, Ana Cristina Valenzuela Cervantes, 17, Junior, School: Colegio de Bachilleres del Estado de Sinaloa "Prof. Hermes Gonzalez Maldonado," Guasave, Sinaloa, Mexico, T: Ubaldo Rivera

**NETHERLANDS**

*Amsterdam, NLD001, INESPO: International Environmental and Sustainability*

*Project Olympiad*

**ENEV065T****Macauba Palm: A Fruitful Future**

Pauline Louise Ten Harmsen van der Beek, 18, Senior, Melanie Martha Gesina Reijnaers, 19, Senior, Eline Peeters, 19, Senior, School: Gertrudis College, Roosendaal, Noord Brabant, Netherlands, T: Miriam Van den Bogaard

**NORTHERN IRELAND**

*Belfast, Ulster, NFK001, Sentinus Young Innovators*

**ENMC005****Gaze: A Low Cost, Digital Optical Device Supporting Education in Developing Countries**

Gareth Reid, 19, Senior, School: Grosvenor Grammar School, Belfast, Northern Ireland, T: Samuel Taggart

**NORTHERN MARIANA ISLANDS**

*Saipan, NMI001, Northern Mariana Islands Science & Engineering Fair*

**ANIM055****Avian Gut Passage Time**

Kloe Kate Borja, 18, Senior, School: Kagman High School, Saipan, MP, Northern Mariana Islands, T: Annette Pladevega

**NORWAY**

*Oslo, NOR001, Norwegian Contest for Young Scientists*

**MATH008T****Motivic Symbols and Classical Multiplicative Functions**

Torstein Vik, 18, Junior, Ane Kristine Espeseth, 19, Senior, School: Fagerlia Videregaende Skole, Aalesund, More og Romsdal, Norway, T: Andreas Holmstrom

**PAKISTAN**

*Islamabad, PAK001, Intel Science Fair*

**BMED069****Anti-Skin Cancer Lotion**

Sadia Qadir, 18, Sophomore, School: Punjab Daanish School for Girls, Hasilpur, Punjab, Pakistan, T: Shumaila Khan

**CHEM050****A New & Low Cost Technology of Electrochemical & Bionic Sensors**

Arqam Ali Khan, 17, Junior, School: Islamabad Model College for Boys, G-10/4, Islamabad, Capital Territory, Pakistan, T: Mian Imran Khaliq

**EAEV071T****Biodegradable Plastic from *Gelidium pusillum***

Mansoor Ahmed, 15, Freshman, Hassan Rizwan, 17, Senior, School: Pak Turk International School and Colleges, Karachi, Sindh, Pakistan, T: Asma Tabassum

**EBED039****Bracelet Aid for Blind People**

Mujtaba Sajjad Kamani, 17, Junior, School: Aga Khan Higher Secondary School, Karachi, Sindh, Pakistan, T: Hafiz Asad

**EGPH028****A Roar for Energy: The Piezoelectric Effect**

Haseeb Ahmed Khawaja, 18, Senior, School: Aga Khan Higher Secondary School, Karachi, Sindh, Pakistan, T: Shoaib Ahmed

**ENMC006 Design and Fabrication of Solar Water Pumping System with Smart Irrigation Technique**  
 Shahzaib Ejaz, 19, Senior, School: PakTurk International Schools and Colleges, Lahore, Punjab, Pakistan, T: Veli Kapcak

**MATS075T Call and Charge the Mobile by Voice Communication**  
 Naeem Hassan, 18, Senior, Ahmad Hassan, 18, Senior, Liaqat Ali, 18, Junior, School: Daanish School Boys Chishtian, Chishtian, Punjab, Pakistan, T: Haq Nawaz Muhammad S.

**PALESTINE**  
*Ramallah, PSE001, Palestine Science and Technology Fair*

**BMED058T Chair of Hope**  
 Rose A. Y. Barakat, 17, Junior, Raghad O. A. Marie, 17, Junior, School: Anabta Secondary Girls School, Tulkarem, West Bank, Palestine, T: Mai Abed Alhaleem

**BMED059T Ascitometer Belt**  
 # Nour A. H. Sammoudi, 16, Sophomore, Ranin A.I. Abahra#, 16, Sophomore, School: Al Yamoun Secondary Girls School, Jenin, Palestine, T: Alaa Abo Obeed

**ENMC036T FuelRFID**  
 Hala M. N. Ishtaiha, 16, Sophomore, Lana A. Y. Haqsh, 15, Sophomore, School: Talae' Al-Amal Secondary Schools, Nablus, West Bank, Palestine, T: Majid Abukharma

## Did you know?

The Yellow Tang fish are in danger of going extinct in some areas of the world due to over-collection and coral bleaching. And this prized ornamental fish could not be bred in captivity.

## Until Now!

The Oceanic Institute at Hawai'i Pacific University worked for ten years to solve this problem. We are now successfully breeding Yellow Tang at our research laboratory in Waimānalo.



“If you’re thinking about going to school for marine biology, you need to come to Hawai'i Pacific University. There really is no better education to forge your career in a research environment working side-by-side with professors. It's the best decision I made.”

**- Dean Klein, HPU Oceanic Institute**



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- SOFT031** **Zarad**  
Taymaa Z. M. Abdalhadi, 17, Junior, School: Ramallah Girls High School, Ramallah, West Bank, Palestine, T: Suzan Ameerah
- SOFT037** **Applying Deep Learning on EEG to Control Bionic Limbs with Humanlike Performance**  
# Akram O. J. Sbaih, 16, Junior, School: Kafr Rai High School, Jenin, West Bank, Palestine, T: Imad Jomaa
- PANAMA**  
*Panama City, PAN001, Feria Cientifica del Ingenio Juvenil*
- ANIM011T** **Catch Size of *Anadara tuberculosa* (Black Cockle), at Charco Azul Mangrove in the Bay of Chame and Recommendations for Their Sustainable Management**  
Elvis Walter Barahona, 19, Senior, Genesis Mariane Bellido, 19, Senior, School: Colegio Dr. Harmodio Arias Madrid, Panama, T: Damaris Aparicio
- BEHA013T** **Reading as a Determinant Factor for Good Writing, in Ninth and Eleventh Graders**  
Maribel Janeth Navarro, 18, Junior, Janeth Navarro, 15, Sophomore, School: Colegio San Agustin, Panama, Chiriqui, Panama, T: Donna Roper
- BMED023** **Antioxidant Activity of Sesquiterpenic Lactones**  
Viviana Esther Justin, 18, Junior, School: Instituto Fermin Naudeau, Panama, T: Ivonne Torres
- PERU**  
*Lima, PER001, Peru Science and Engineering Fair*
- BEHA001T** **Quipukuna and Tocabukuna: The Mysterious Inca Books**  
Luz Lesslie Castillo Choque, 14, Freshman, Allison Gabriela Ramos Olvea, 15, Freshman, School: Institucion Educativa Privada de Senioritas Luz Andina Reyna de Las Americas, Juliaca, Puno, Peru, T: Milton Calla Pilco
- CBIO005T** **Recognition of Anxiety Levels from the Analysis of Skin's Galvanic Response**  
Alfred Addison Chillitupa Quispihuanca, 15, Freshman, Alex Rodrigo Palacin La Torre, 15, Freshman, School: Colegio de Alto Rendimiento de Arequipa, Arequipa, Peru, T: Benjamin Maraza Quispe
- PLNT005T** **Production and Application of Efficient Microorganisms (E.M.) Technology and Dissemination of their Advantages for the Cultivation of Coffee, in the Ballota Farm, Huancabamba District**  
Ariana Koryn Casimiro Salazar, 17, Freshman, Koraima Elizabeth Tamayo Cisneros, 16, Freshman, School: Institucion Educativa San Francisco de Asis, Oxapampa, Pasco, Peru, T: Santos Gil Cipriano
- PLNT006T** **Multiplication of Weberbauer Cactus Seedlings Using HAS (Hydroponic Autotrophic System), from Microcuttings of Vitroplants for Its Reforestation**  
Brayan Miguel Maidana Lopez, 15, Freshman, Santiago Mauricio Valdivia Cervantes, 16, Freshman, School: Institucion Educativa San Juan Bautista de la Salle, Arequipa, Peru, T: Basilio Flores Cruz
- PHILIPPINES**  
*Pasig City, PHL001, Philippines Science Fair*
- BCHM015** **Neuroprotective Potential of Coconut (*Cocos nucifera*) Leaf Extract Using Transgenic *Caenorhabditis elegans***  
# Maries Ann Ramos Silvestre, 17, Sophomore, School: Juan R. Liwag Memorial High School, Gapan City, Nueva Ecija, Philippines, T: Mary Lorraine Lorido
- ENEV038** **The Potential of Selected Agricultural Wastes as Sound Absorber and Thermal Insulator Based on Their Surface Morphology**  
Ricky Dave Torres Mercado, 18, Junior, School: Nabuslot National High School, Pinamalayan, Oriental Mindoro, Philippines, T: Romnick Ureta
- PLNT028T** **Insecticidal Activity of Acacia (*Samanea saman*) Bark Extract Against Adult Rice Black Bug (*Scotinophora sp.*)**  
Nadine Antonette Obafial, 17, Freshman, Myrelle Angela T. Colas, 16, Freshman, Rubeliene Chezka Fernandez Gloria, 16, Freshman, School: Davao City National High School, Davao City, Davao Del Sur, Philippines, T: Julius Centina

**POLAND***Gdynia, PLD001, E(x)plory Science Fair***CBIO004    A Combined Analytical and Computational Approach to Multiscale Modeling of Temperature Effects on Neural Dynamics**

Dominik Stanisław Kufel, 19, Senior, School: S. Staszic High School No. 1, Lublin, Lubelskie, Poland, T: Grzegorz Wojcik

**PHYS006T    Numerical Methods of Raytracing in Curved Spacetimes According to Einstein's Theory of General Relativity**

Jakub Krzysztof Szewczyk, 18, Senior, Grzegorz Eugeniusz Uriasz, 19, Senior, School: I Liceum Ogólnokształcące im. Mikołaja Kopernika w Krosnie, Poznań, Wielkopolska, Poland

**PHYS045    Analysis of Gerchberg-Saxton Algorithm**

Mateusz Sieniawski, 19, Senior, School: Zespół Szkół Uniwersytetu Mikołaja Kopernika Gimnazjum i Liceum Akademickie, Toruń, Warmińsko-Mazurskie, Poland, T: Mariusz Kaminski

**PORTUGAL***Lisboa, PRT001, Portuguese Contest for Young Scientists***ANIMO42T    Neuro Test**

Mariana de Pinho Garcia, 19, Senior, Matilde Goncalves Moreira da Silva, 19, Senior, Beatriz Ines de Oliveira Ferreira Martins Gomes, 20, Senior, School: Escola Secundaria de Arouca, Arouca, Portugal, T: Jose Filipe Ressurreicao

**CHEM046T    Banana Peel: The Water Cleaner**

Joana Amendoeira Cabaco, 19, Senior, Ana Lucia Ferreira da Silva, 19, Senior, Gustavo Rafael Rito Carvalho, 19, Senior, School: Azambuja High School, Azambuja, Ribatejo, Portugal, T: Margarida Duarte

**PUERTO RICO***San Juan, TEPR01, Puerto Rico Math Fair***MATH035    Approximations of Zeros in Differentiable Functions**

Adrian Omar Olivera-Olivera, 17, Senior, School: Centro Residencial de Oportunidades Educativas de Mayaguez, Mayaguez, Puerto Rico, T: Edwin Benvenuti

**MATH036    An Addition to the Problem of Points**

Daniel Alejandro Santiago, 16, Freshman, School: Centro Residencial de Oportunidades Educativas de Mayaguez, Mayaguez, Puerto Rico, T: Heriberto Monroig

**MATH037    Transposed Matrices in Archaeological Seriation to Analyze Aging and Distance Between Archaeological Features in an Integrated Development Environment**

Alex Manuel Colon Vazquez, 17, Junior, School: Specialized Science and Math Secondary School Thomas Armstrong Toro, Ponce, Puerto Rico, T: Esperanza Soto Rivera

*Arecibo, TEPR02, Arecibo Regional Science Fair***EGPH023T    Transforming Alternate Current (AC) to Direct Current (DC) via Kinetic Energy**

Kevin Manuel Matias, 19, Senior, Ensol David Tomassini Morales, 18, Senior, School: Padre Anibal Reyes Belen, Hatillo, Puerto Rico, T: Liduvina Cruz

**PLNT064    Effects of the Hartmann Lines in the Cultivation of *Phaseolus vulgaris***

Krystal Arianne Rosario Cruz, 15, Freshman, School: S.U. Dr. Cayetano Coll y Toste, Arecibo, Puerto Rico, T: Camille Medina Rodriguez

*Bayamon, TEPR03, Bayamon Regional Science Fair I***EGPH022    Smart Self-Sustaining Lighting System**

# Karlos Lenniel Nicolas Miranda Garces, 18, Senior, School: Adela Rolon Fuentes, Toa Alta, Puerto Rico, T: Xavier Morales

**PLNT035T    The Effects of an Infusion of Pine Tree Needles (*Pinus pinaster*) Using It as Herbicide Over Weeds in a Home Garden**

Jeylimar Fuentes Rivera, 17, Junior, Lozada Kataria Marie Santiago Lozada, 16, Junior, School: Francisco Morales Rivera, Naranjito, Puerto Rico, T: Jeannette Berríos

*Caguas, TEPR04, Caguas Regional Science Fair*

**CELL038** **HuR Spatial Localization Is Affected by p38 MAPK Phosphorylation Upon T-Cell Activation**

Rocio del Mar Aviles Mercado, 18, Senior, School: Pablo Colon Berdecia, Barranquitas, Puerto Rico, T: Ivette Palomino

**CHEM041** **Use of a Polymer Derived from *Citrus sinensis* Peel to Remove Heavy Metals Dissolved in Water such as Hexavalent Chromium**

Marisabel Colon, 18, Senior, School: Specialized School of Science and Mathematics Genaro Cautino Vazquez, Guayama, Puerto Rico, T: Haydee Laporte

**EAEV056** **Determination of Lead in *Ostrea rizophora* at Jobos Bay**

Nicole Alejandra Colon, 18, Senior, School: Specialized School of Sciences and Mathematics Genaro Cautino Vazquez, Guayama, Puerto Rico, T: Haydee Laporte

*Humacao, TEPR05, Humacao Regional Science Fair*

**MATS040** **Fabrication of Carbon Nanosphere-Based Gas Sensor**

Jose Luis Perez-Gordillo, 18, Senior, School: Petra Mercado Bougart, Humacao, Puerto Rico, T: Jose Orellana-Torres

**PLNT052T** ***Cnidocolus aconitifolius*, *Azadirachta indica*, *Moringa oleifera* and *Mentha spicata* as an Organic Plaguicide for the Prevention of Premature Crops**

Laina Sofia Llano, 18, Junior, Tyrone O. Nieves, 17, Junior, School: Residential Center of Educational Opportunities in Ceiba, Ceiba, Puerto Rico, T: Guillermina Saldana

*Ponce, TEPR06, Ponce Regional Science Fair*

**BCHM018** **A Novel Method to Prevent Digestive Disorders: The Creation of an Enzymatic Catalysis Enhancer for Bromelain from *Ananas comosus* (Pineapple) for the Digestive Function of Casein, Ovalbumin, *Glycine max* (Soy) and *Pisum sativum* (Pea) Proteins**

Christopher Ariel Martinez Tiru, 18, Senior, School: Specialized Science and Math Secondary School Thomas Armstrong Toro, Ponce, Puerto Rico, T: Carmen Noble

**EGCH027** **Voltage Production by *Geobacter sulfurreducens* as a New Source of Renewable Energy**

Jose Luis Rodriguez, 18, Senior, School: Specialized Science and Math Thomas Armstrong Toro School, Ponce, Puerto Rico, T: Jonatan Plaza

**MATS042** **A Novel Method to Detect Alcohol Vapors Based in the Polymeric Nanofiber PEDOT-PSSA**

Marialis Casillas, 18, Senior, School: Specialized School in Science and Math Thomas Armstrong Toro, Ponce, Puerto Rico, T: Kathia Rodriguez

*San Juan, TEPR07, San Juan Archdiocesan Region Science Fair*

**CHEM040T** **Biosynthesis of Metallic Nanoparticles with the use of Extract from Macroalgae *Osmundaria obtusiloba***

Sophia Del Mar Rosa-Duran, 16, Junior, Veronica Lacourt-Otero, 17, Junior, School: Colegio Nuestra Senora de la Piedad, Carolina, Puerto Rico, T: Janice Arroyo-Figueroa

**EAEV072** **The Extraction of Oil from Chlorophyta Algae in Different Water Environments**

Raul Ignacio Vila-Olazabal, 17, Junior, School: Colegio San Ignacio de Loyola, San Juan, Puerto Rico, T: Aileen Gonzalez-Rodriguez

**EBED029T** **Clap Detecting System Using a Raspberry Pi**

Dania Maraliz Villafuerte-Gonzalez, 16, Sophomore, Sofia El Badaoui-Rivero, 17, Sophomore, School: Colegio Mater Salvatoris, San Juan, Puerto Rico, T: Myriam Cruz

**EBED030** **Visualizing Sound Decibels**

Daniela Del Mar Villafuerte, 18, Senior, School: Academia San Jose High School, Guaynabo, Puerto Rico, T: Minu Pagan

**ENMC063T** **No More Heat Awaiting in the Car**

Virginia Marie Martin, 16, Sophomore, Esteban Josue Martinez, 16, Sophomore, School: Col. Beato Carlos Manuel Rodriguez, Bayamon, Puerto Rico, T: Nilka Mulero



Mayaguez, TEPR08, Mayaguez Regional Science Fair

**CELL039** **Determining the Presence of Genetically Modified Organisms in Our Daily Foods**  
Paulina Minguela Torres, 16, Sophomore, School: Liceo Aguadillano, Aguadilla, Puerto Rico, T: Sylvette Rivera Pabon

**EGPH024T** **Programmable System for the Extraction of Hydroelectric Energy**  
Norman Ariel Toro Vega#, 18, Senior, Emanuel Felipe Burgos Robles, 18, Senior, School: Dr. Carlos Gonzalez High School, Aguada, Guaniquilla, Puerto Rico, T: Yamitza Rosas Rodriguez

**MATS041** **Sugar Cane Bagasse as Raw Material to Minimize Deforestation and the Use of Plastics**  
Andrea Torres-Acevedo, 15, Freshman, School: Academia San Agustin y Espiritu Santo, Sabana Grande, Puerto Rico, T: Lilliam Rodriguez

**MCRO045T** **Chewing Gum's Antimicrobial Activity Using Plant Derived Essential Oils and Xylitol**  
Loren Aldarondo-Torres, 17, Senior, Michelle Angelie Narvaez-Ramos, 17, Senior, School: Centro Residencial de Oportunidades Educativas de Mayaguez, Mayaguez, Puerto Rico T: Brenda Cabrera-Cintron

San Juan, TEPR09, San Juan Regional Science Fair

**EGCH028T** **Electrochemical Application in a Battery with the use of Fuel Cells**  
Justin Enrique Melendez Campos, 18, Senior, Joshua Soto, 18, Senior, School: Voc Miguel Such, Rio Piedras, San Juan, Puerto Rico, T: Jose Diaz

**ENMC049** **Morphing Wing for Trucks: Greater Stability in Cornering**  
##  
Felix Junior Morales, 18, Senior, School: Colegio Congregacion Mita, San Juan, Puerto Rico, T: Dana Perez

Mayaguez, TEPR10, SESO Regional Science Fair

**ENEV014** **Phosphorus Recovery from Storm Water Runoff with Seawater-Mixed Pervious Concrete for Reutilization as a Mineral Fertilizer**  
#  
Vincent Daamvin Hwang, 18, Senior, School: Southwestern Educational Society, Mayaguez, Puerto Rico, T: Evelyn Montalvo

Cayey, TEPR11, Radians Science & Engineering Fair

**EAEV057** **Mineralogical Characterization of Puerto Rico's Beach Sand and Its Relationship to Puerto Rico's Volcanic Origin**  
Delian Colon, 16, Sophomore, School: Radians School, Cayey, Puerto Rico, T: Luz Burgos

San Juan, TEPR12, Puerto Rico Metropolitan Science Fair

**CBIO019T** **Novel Mathematical Approach to Aid in the Design of an Alert System for an Ongoing Focal Seizure**  
Omar Alejandro Santiago-Reyes#, 17, Junior, Gustavo Xavier Santiago-Reyes#, 17, Junior, School: Escuela Secundaria Especializada en Ciencias, Matematicas y Tecnologia, Caguas, Puerto Rico, T: Maytee Cruz-Aponte

**EBED025** **Use of a Novel Arduino System as a Sensor for Detecting and Controlling Mosquito Populations**  
Alberto Gustavo Rodriguez-Masso, 17, Junior, School: Colegio Rosa-Bell, Guaynabo, Puerto Rico, T: Yajaira Torres

**EGCH021** **Synthesizing Bio-Diesel from Different Vegetable Oils via Transesterification**  
Jorge Alejandro Ruiz-Ruiz, 15, Freshman, School: Escuela Secundaria Especializada en Ciencias, Matematicas y Tecnologia, Caguas, Puerto Rico, T: Milagros Carire

**ENBM043T** **X-Enhance: A New Technology of Color Enhancement for the Visually Impaired**  
##  
Angelik Laboy-Torres##, 18, Senior, Sebastian Hernandez-Castro, 18, Senior, School: Escuela Especializada en Ciencias, Matemáticas y Tecnología, Caguas, Puerto Rico, T: Milagros Carire

**ENEV068** **Filtration of Copper-Contaminated Water Using *Crescentia cujete's* Shell Based Activated Carbon**  
Jose Luis Ramirez-Colon, 18, Senior, School: Escuela Secundaria Especializada en Ciencias, Matematicas y Tecnologia, Caguas, Puerto Rico, T: Milagros Carire

- MCRO035** **Role of SRCR Domains in Collagen IV-Crosslinking Activity of LOXL2**  
Abner Xavier Pena, 18, Junior, School: Escuela Secundaria Especializada en Ciencias, Matematicas y Tecnologia, Caguas, Puerto Rico, T: Roberto Vanacore
- QATAR**  
*Doha, QAT001, The National Student Research Fair*
- BCHM036T** **Niacin and Beta-Curcumene from Ziziphus spina-christi Are the Most Promising Approaches to Treating Alpha-1 Antitrypsin Deficiency**  
#  
Abdulah Ahmed AlSolaiman#, 18, Senior, Saleh Al-Muhaizaa, 18, Senior, School: AlShamal Secondary School for Boys, AlShamal, Qatar, T: Wael Mohamed
- CELL059** **Differentiation of Pluripotent Stem Cells into Pancreatic Progenitors**  
#  
Sara Mohammed Alkabbi, 17, Junior, School: Qatar Banking Studies and BA High School for Girls, Doha, Qatar, T: Ghada Abu Nada
- ENBM054T** **The Smart Bed to Protect Children from the High Temperature**  
Khalifa Khalid Al-Marri, 16, Sophomore, Ahmed Jamal Eliwa, 17, Junior, School: Ahmad Bin Mohammad Secondary School, Doha, Qatar, T: Samer Rawashdeh
- MATS081T** **Marine Degradable Plastic Based on Soybean By-Products**  
Sharifa Ahmed Al-Muhanadi, 17, Junior, Thajba Mohammed Al-Hail, 17, Junior, School: Al-Khor Independent Secondary School for Girls, Al-Khor, Qatar, T: Azza Abouhashem
- PHYS042T** **Discovery of Qatar 6-b Exoplanet**  
Amani Abdulrahman M S Al-Rajhi, 17, Junior, Abeer Khalifa Al-Harbi, 17, Junior, School: Qatar Secondary School For Girls, Doha, Qatar, T: Samia Ismail
- TMED049T** **The Effectiveness of a Preventive Remedial Program to Treat the Flat Foot Deviation of Primary Boy-Students (6:9 Years)**  
Ahmad Rajab Alasmar, 19, Senior, Fahed Almkhlef, 19, Senior, School: Ibn Taymeya Secodary School for Boys, Doha, Qatar, T: Elsayed Ouf
- REPUBLIC OF MOLDOVA**  
*Chisinau, MDA001, Moldova Science and Engineering Fair*
- ENMC025** **External Combustion Open-Cycle Engine**  
Ion Cerempei, 18, Senior, School: Theoretical High School "George Calinescu," Chisinau, Republic of Moldova, T: Iurie Molotcov
- MCRO016T** **Empowering the Antibacterial and Antifungal Effects of Juglone by Obtaining Juglone: Beta Cyclodextrin Binary System for Pharmaceutical Purposes**  
Nadejda Hincu, 19, Senior, Elena Tighineanu, 19, Senior, School: Theoretical High School "Orizont," Chisinau, Republic of Moldova, T: Ilker Ozer
- SOFT019T** **Behave: An Authentication System Based on Keyboard and Mouse Dynamics**  
Sandu Chirita, 17, Sophomore, Igor Moscalet, 15, Freshman, School: "B.Z.Herzl" ORT Technological Lyceum, Chisinau, Republic of Moldova, T: Vitaly Kirillov
- ROMANIA**  
*Suceava, ROM001, Romania Science and Engineering Fair*
- EGCH006T** **Hybrid Photovoltaic Cells Based on Biologic and Polymeric Materials**  
Ioana Andreea Stelea, 17, Sophomore, Miruna Elena Vlad, 18, Junior, School: International Computer High School of Bucharest, Bucharest, Romania, T: Ferhat Travaci
- EGPH029** **Solar Bimetallic Actuator**  
Claudiu Nicolae Nitau, 18, Sophomore, School: Mihai Eminescu National Colledge of Suceava, Suceava, Romania, T: Andreea Chiper
- ENBM007T** **Microsensors Monitoring Devices Regarding the Rehabilitation Process Carried Out After Orthopaedic Surgeries of the Lower Limb**  
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Miruna Alexandra Ojoga#, 17, Junior, Ana-Maria Tudorache#, 18, Junior, School: International Computer High School of Bucharest, Bucharest, Romania, T: Mircea Ignat

- ENBM082T** **Cancer Application Using Magnetosomes**  
 ## Elena Fengyuan Yuan#, 18, Junior, Cristian Ionut Costin#, 17, Junior, School: International Computer High School of Bucharest, Bucharest, Romania, T: Mircea Ignat
- ROBO036T** **Study of the Movements of the Eye with Applications in Electromechanical Unconventional Micro-Drives**  
 Andra Maria Ciutac, 18, Senior, Carmen Gabriela Popa, 19, Senior, School: National Bilingual High School "George Cosbuc," Bucharest, Romania, T: Mircea Ignat

## RUSSIAN FEDERATION

*Nizhny Novgorod, RUS001, ROST*

- CHEM009** **How to Stop the "Walking" Protein?**  
 Darina Gennadiyevna Vekhova, 18, Junior, School: Municipal School #41 "Harmony," Samara, Russian Federation, T: Evgeniya Lashmanova
- ENBM034** **An Electric Spark Scalpel**  
 Valeriia Olegovna Lebedeva, 17, Sophomore, School: Gymnasium #5, Korolyov, Moscow Region, Russian Federation, T: Vladimir Lebedev
- PHYS008** **Porphyrazine in Cell: Light-Triggered Killer Plus Viscosity Measurer**  
 Anna Aleksandrovna Kogan, 18, Junior, School: Lyceum #40, Nizhny Novgorod, Nizhegorodskaya Oblast, Russian Federation, T: Elena Kochneva
- PHYS032** **Nuclear-Precessional Hydroscope**  
 Andrei Sergeevich Poliakov, 18, Junior, School: Lyceum #40, Nizhny Novgorod, Nizhegorodskaya Oblast, Russian Federation, T: Roman Shilkov

*Moscow, RUS002, Junior-I*

- CHEM006T** **Utilization of Carbon Monoxide as a Reducing Agent for C-C and C-N Bond Formation: Application to Asymmetric Catalyst and Synthesis of New Effective Fungicide**  
 Alexandra Samoylova, 18, Junior, Maria Makarova, 18, Junior, School: Moscow Chemical Lyceum of Moscow South-Eastern Lyceum and Grammar School Complex, Moscow, Russian Federation, T: Denis Chusov
- CHEM016** **Unexpected Photochemical Transformations of Dithienylacetylenes**  
 Nikita Milevskii, 18, Junior, School: Moscow Chemical Lyceum of Moscow South-Eastern Lyceum and Grammar School Complex, Moscow, Russian Federation, T: Andrey Lvov
- EAEV008** **Determination of Size and Concentration of Water Droplets in Experiments with Wilson Chamber**  
 Evgenij Sergeevich Goncharov, 19, Junior, School: Municipal Budget Educational Institution "Lyceum No. 3," Sarov, Nizhegorodskaya Region, Russian Federation, T: Alexandra Kvasova

- ENBM008** **Neuro-Computer Interface as a Means of Increasing Efficiency of Mental Activity**  
 Olga Daniilovna Golovan, 17, Sophomore, School: Municipal Gymnasium of the City Fryazino, Fryazino, Moscow Region, Russian Federation, T: Inna Emelina

- MATH013** **Generalized Problem of Apollonius**  
 Egor Morozov, 18, Senior, School: Lyceum "Second School," Moscow, Russian Federation, T: Fedor Nilov

- PHYS009T** **Identification of X-Ray Sources and Discovering New Variable Stars**  
 Raul Karachurin, 15, Freshman, Sergey Timofeev, 16, Freshman, School: Lyceum No.1568, Moscow, Russian Federation, T: Denis Denisenko

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

- ROBO044** **Assistive Robot for Blind and Low Vision Travelers**  
 Valerii Andreevich Chernov, 18, Junior, School: Presidential Physics and Mathematics Lyceum No. 239, Saint-Peterburg, Russian Federation, T: Tatiana Martemianova

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

- CBIO007T** **Development of a Software Tool for Protein-Protein Complex Prediction**  
 Daniil Reutskiy, 18, Junior, Aleksandr Ukhatov, 18, Junior, School: St. Petersburg Academic Lyceum "Physical-Technical High School," St. Petersburg, Russian Federation, T: Konstantin Stolbov

- MATH014** **Identities of Perkins Monoid and Millennium Problem**  
Dmitrii Mikhailovskii, 17, Sophomore, School: School 564, St. Petersburg, Russian Federation, T: Ilya Chistyakov
- MATH015** **Generalized Jacobi Identities and Jacobi Elements of the Group Ring of the Symmetric Group**  
Savelii Alexandrovich Novikov, 17, Sophomore, School: School 564, St. Petersburg, Russian Federation, T: Ilya Chistyakov
- ROBO019** **The Prototype of Mars Rover**  
Artem Pavlenko, 18, Junior, School: City Palace of Children's (Youth) Creativity, Omsk, Russian Federation, T: Margarita Ponomareva  
*Chernogolovka, RUS005, Avangard*
- CHEM051T** **Organic Dyes Based on [1,2,5] chalcogenadiazolo [3,4-c] pyridine: New Effective Materials for Solar Cells**  
German Chkhetiani, 18, Junior, Olga Ustimenko, 18, Junior, School: Moscow South-Eastern Lyceum and Grammar School Complex, Moscow, Russian Federation, T: Ekaterina Knyazeva
- MATH039** **The Reve's Puzzle**  
Ilya Nikolaevich Stepanov, 17, Sophomore, School: Municipal Classical Lyceum, Kemerovo, Russian Federation, T: Natalia Daurtseva
- MATS044** **Formation of TiO<sub>2</sub> Surface Structure under IR Laser Ablation of Titanium in C<sub>2</sub>H<sub>5</sub>OH (5% H<sub>2</sub>O) Liquids Environment. Prospects for Subsequent Chemical Processing of the Modified Layer**  
Maria Borisova, 18, Junior, School: Samara Regional Centre for Intellectually Gifted Children, Samara, Russian Federation, T: Pavel Kazakevich  
*Moscow, Barnaul, RUS006, Scientists of the Future Fair*
- CHEM052** **New Route to Benzoxazoles Based on Annulation Induced Transformations of 1,2,3-triazoles**  
Uliana Dmitrievna Moskalenko, 17, Junior, School: Moscow South-Eastern Lyceum and Grammar School Complex, Moscow, Russian Federation, T: Yury Kotovshchikov
- ENMC061T** **Solenoid Engine**  
Mikhail Burlachenko, 17, Sophomore, Sergey Andrei Perkov, 17, Sophomore, School: State Budgetary Educational Institution of Moscow "Gymnasium No 1786," Moscow, Russian Federation, T: Sergei Pankov
- MATH016** **Systems of Tangent Circles Inscribed in Generalized Archimedes Arbelos**  
Makar Volkov, 18, Junior, School: The Rostov Region Center of Additional Education, Rostov-on-Don, Rostov Region, Russian Federation, T: Mikhail Gurov
- MATH045** **Some Properties of the Jacobi Point in the Triangle**  
Daria Leonidovna Orlova, 17, Junior, School: Municipal Budgetary Educational Institution "Secondary School No. 40" Named after Rufina Ovsievskaya, Barnaul, Altai Region, Russian Federation, T: Yuri Maltsev
- PHYS010** **Shock Waves in Shallow Water on a Rotating Disk**  
Kirill Smirnov, 18, Junior, School: The Advanced Education Science Center "Kolmogorov" Boarding School of the Moscow State University, Moscow, Russian Federation, T: Evgeny Mogilevskiy
- SOFT041** **DriveLife Simulator**  
Anton Zinkevich, 17, Sophomore, School: Non-Typical Comprehensive Institution "Municipal Classical Lyceum," Kemerovo, Kemerovskaya Oblast, Russian Federation, T: Elena Izmaylova
- SAUDI ARABIA**  
*Riyadh, SAU001, Mawhiba Science & Engineering Fair*
- ANIM052** **The Effect of Expression Patterns of Ammonium Transporters on the Interaction Between Corals and Their Symbiotic Dinoflagellates**  
Amaar Abdulrazack Amir, 18, Junior, School: Dhahran Ahliyya Schools, Dhahran, Eastern Province, Saudi Arabia, T: Noura Zahran
- BMED072** **Role of Wnt Self-Renewal Pathway in Regulating Tumor Initiating Cells in Breast Cancer**  
Omar Bakr Alammari, 17, Senior, School: Imam Al-Alousi High School, Riyadh, Riyadh, Saudi Arabia, T: Rayyanah Barnawi

- CBIO040 Identification of Type 2 Diabetes Mellitus Related Single Nucleotide Polymorphisms in the Middle East with Comparative and Epigenetic Analysis**  
Alea Abduljabbar Mohammed-Hussain, 18, Senior, School: AlAziziyah Private Schools, AlKhobar, Eastren Province, Saudi Arabia, T: Mineta Katsuhiko
- CBIO041 RNA-Seq Investigation of Transgenerational Acclimation to Thermal Stress in Coral Reef Fish**  
Omar Ayman Fayoumi, 18, Senior, School: Dar Althikr Private School, Jeddah, Mecca, Saudi Arabia, T: Timothy Ravasi
- CHEM066 Sustainable Graphene Oxide Support for Ruthenium Catalyst to Improve the Efficiency of the Hydrodesulfurization of Thiophenes**  
## Abdulaziz Yahya Alshahrani, 18, Junior, School: The First High School in Abha, Abha, Aseer, Saudi Arabia, T: Nasser Awwad
- EBED044 Development of Microresonator-Based Logic Gates Using Signal Conditioning Circuits**  
Faisal Abdullah Shafiei, 18, Senior, School: Abdulrahman Fakieh School, Makkah, Makkah, Saudi Arabia, T: Hendawi Shaaban
- EGCH038 A Novel Approach for the Preparation of High Efficiency Water Splitting Photocatalysts**  
Dana Abdulwahab Alkhalidi, 18, Senior, School: KFUPM Schools, Dhahran, Eastern Province, Saudi Arabia, T: Muhammad Qureshi
- EGCH039 Optimization of Inverted Planar Methylammonium Lead Halide Perovskite Solar Cells**  
Noor Nezar Alkhonaizi, 18, Senior, School: Dhahran Ahliyya Schools, Dhahran, Eastern Province, Saudi Arabia, T: Esma Ugur
- EGCH040 Promising Fuel in Advanced Engines: Ignition Delay Measurements and Modeling of Straight Run Naphtha**  
Abdulaziz Abdulrahman Alsalem, 18, Senior, School: Dhahran Ahliyya Schools, Dhahran, Eastern Province, Saudi Arabia, T: Mohammed AlAbbad
- ENBM070 Efficient Genome Editing of Mammalian Cells via Novel sgRNA Architectures and Cas9 Endonuclease**  
Rania Abdullah Alghamdi, 18, Senior, School: Dhahran Ahliyya Schools, Dhahran, Eastren Province, Saudi Arabia, T: Magdy Mahfouz
- ENBM071 Flexible Low-Cost Sensory Patch for Chronic Wheezing Detection**  
Abdullah Mohammed Almansour, 18, Junior, School: Dar Alfikr Schools, Jeddah, Makkah, Saudi Arabia, T: Aysar AlOmari
- ENEV066 Green Nanotechnology: Increasing Sewage Water Treatment Efficiency by Using Economical Porcelanite Nanoparticles**  
Ruba Yosof Alsulami, 18, Senior, School: Jeddah Gifted School, Jeddah, Makkah Almukkarmah, Saudi Arabia, T: Amnah Aljehani
- ENEV067 Converting Industrial Waste into Eco-Friendly Products for Pharmaceutical Applications**  
Dana Abdullah Alghamdi, 17, Junior, School: KFUPM Schools, Dhahran, Eastern Province, Saudi Arabia, T: Tamer Youssef
- MATS067 Enhancing LiFi and Lighting: CsPbBr<sub>3</sub> Zero-Dimensional Perovskite and Quantum Dot Based Color Converters**  
Nadia Abdulrahman Almutlak, 18, Junior, School: AlTarbyah Allslamiya Schools, Riyadh, Saudi Arabia, T: Hana Sahion
- MATS068 Improving Resistive RAMs' Performance by Using Single Crystal MAPbBr<sub>3</sub> Perovskite**  
Sara Ahmed Alrabiah, 18, Senior, School: AlTarbya Allslamyah Schools, Riyadh, Saudi Arabia, T: Hana Sahion
- SOFT048 Comparative Analysis of Graph Coloring Algorithms**  
Maha Fahad Alrashed, 18, Senior, School: AlOlayya Private Schools, Riyadh, Saudi Arabia, T: Liam Mencil
- SOFT049 Developing an Algorithm to Simulate and Visualize Abelian Sandpiles on Three Types of Lattices**  
Razan Fouad Alkawai, 18, Senior, School: The Sixth High School, Qatif, Eastern Province, Saudi Arabia, T: Yiannis Hadjimichael

**TMED050** **Ultrastructural Characterization of MCF-7 Breast Cancer Cells Exposed to Cerium Oxide Nanoparticles Using TEM and SEM Analysis**  
Danya Salah Aljishi, 18, Senior, School: Sixth Secondary School, Qatif, Eastern Province, Saudi Arabia, T: Cristiano Di Benedetto

#### SINGAPORE

*Singapore, SGP001, Singapore Science and Engineering Fair*

**ENBM024** **Inexpensive and Accurate Test Kit for Zika: Point-of-Care Diagnostics in 10 Minutes with Paper-Based Serological Flow Device**

Hsi-Min Chan, 16, Sophomore, School: Raffles Girls School (Secondary), Singapore, Singapore, T: Shaun De Souza

**ENEV024T** **Versatile Usage of Spent Coffee as an Eco-Friendly Water Purifier**

Shawn Hai Leong Lim, 17, Junior, Bryan Wei Leong Lim, 17, Junior, Dominic Wei Ting Yap, 17, Junior, School: Hwa Chong Institution, Singapore, Singapore, T: Yoke Keow Peh

**MATS018T** **Enhancement of Magnetorheological Fluids for Prosthetic Knee Applications**

# Kit Mun Chow#, 18, Senior, Clara Keng#, 18, Senior, Schools: River Valley High School, Raffles Institution, Singapore, Singapore, T: Chow Ban Hoe, Guoxian Tan

**MATS019** **Emergent Properties from WS2 Empowered by Laser Sculpting and Au Nanoparticles Landscaping**

Belle Miaoer Sow, 18, Senior, School: NUS High School of Mathematics & Science, Singapore, Singapore, T: Sher-Yi Chiam

**TMED011** **Label-free Immunosensors for Early and Expedient Diagnosis of Multi-Organ Failure**

Paula Nazarene Evangelista Say, 18, Senior, School: National Junior College, Singapore, Singapore, T: Lynn Ng

**TMED012** **Developing a High-throughput Platform for Drug Toxicity Screening**

Andrea York Tiang Teo, 17, Junior, School: Raffles Institution, Singapore, Singapore, T: Shaun De Souza

#### SLOVAKIA

*Bratislava, SVK002, AMAVET–Slovak Association for Youth, Science & Technology*

**ANIM048T** **The Potential Use of Natural Essential Oils in Prevention from Ticks of Dermacentor and Haemaphysalis Genus**

Samuel Smoter, 18, Sophomore, Miriam Feretova, 18, Sophomore, School: Grammar School of St Nicholas, Preajov, Preajovsky, Slovakia, T: Miriam Feretova

**TMED041T** **Improving Subjective Sleep Quality and Deep Sleep Duration in High School Students**

Juraj Vasek, 19, Junior, Dominika Gaborova, 19, Junior, School: Gumnazium Viliama Paulinyho-Totha, Martin, Zilinsky Kraj, Slovakia, T: Jana Tavelova

#### SLOVENIA

*Ljubljana, SVN001, Slovenia Science and Engineering Fair*

**CHEM053** **Starch-Based Bioplastic as Optical Indicator for Ammonia In Processed Meat**

Stasa Gejo, 20, Senior, School: Il. Gimnazija Maribor, Maribor, Stajerska, Slovenia, T: Zdenka Keuc

#### SOUTH AFRICA

*Boksburg, Gauteng, ZAF001, Expo for Young Scientists–South Africa*

**BEHA003** **The Link Between Toddlers and Scientists**

Bianka Elain Reyneke, 18, Senior, School: Welkom Gimnasium High School, Welkom, Free State, South Africa, T: Anina Nel

**EGCH045** **Green Nano Supercapacitors**

Lawrence John van Staden, 18, Senior, School: St. Dominics Newcastle, Newcastle, KwaZulu-Natal, South Africa, T: Regina van Staden

**EGPH041** **Investigation of the Performance of Home-Made Flywheel Energy Storage Systems**

Katinka Nell Wilkinson, 16, Sophomore, School: Herschel Girls High School, Cape Town, Western Cape, South Africa, T: Michael Brasler

- ENMC008T** **Improving Forklift Maneuverability**  
Reinier Conrad Scherman, 17, Junior, Christiaan Bernard Myburg, 17, Junior,  
School: Hoerskool Waterkloof, Pretoria, Gauteng, South Africa,  
T: Carin De Beer
- MCRO065T** **The Influence of Pollution on the Bacterial Diversity in Dams**  
Jacqueline Janse van Rensburg, 18, Senior, Zamazimba Swelihle Madi, 17,  
Senior, Schools: Hoerskool Oos-Moot, Lyttelton Manor High School, Pretoria,  
Gauteng, South Africa, T: Andries Stolp, Yolandi Visser
- PLNT024** **A Neurotoxin in the Pollen of Southern African Cycads**  
Anika Carmen Meyer, 15, Freshman, School: Waterkloof Hoerskool, Pretoria,  
Gauteng, South Africa, T: Carin De Beer
- TMED031** **The Application of Photochromism in Sun Protection as an Indicator of Sunscreen Efficacy**  
Farah Shaik, 17, Junior, School: Star College Girls' High School, Durban,  
KwaZulu Natal, South Africa, T: Hasan Bas

**SOUTH KOREA***Seoul, KOR001, Korea Olympiad in Informatics*

- ROBO030T** **Advanced Cell Recognition and Clustering Based on Deep Learning**  
Dongyun Lee, 18, Senior, Jaewoong Ahn, 18, Senior, Gyusung Cho, 18,  
Senior, School: Sejong Academy of Science and Arts, Sejong-si, South Korea,  
T: Junho Jeon
- SOFT013** **Image Explanation Software for the Blind**  
Taewon Kang, 15, Freshman, School: Sejong Academy of Science and Arts,  
Sejong, South Korea, T: Hyunjung Shin
- SOFT018T** **UOK? A Baby Monitoring System for the Visually Impaired Parents**  
Youngchae Chee, 17, Junior, School: Dongsin Science High School, Daejeon,  
T: Leeson Bok Jihye Park, 17, Sophomore, School: Daejeon Dongsin Science  
High School, Daejeon, South Korea, T: Leeson Bok
- SOFT036** **Music Braille Converter for Non-Braille Translator**  
Yoon-Kon Nam, 17, Senior, School: Boin, Seoul, Songpa-gu, South Korea,  
T: Soung-Moon Lee

*Seoul, KOR002, YSC (National Science Research Competition)*

- EAEV090T** **Air Purifier Using Water for Fine Particle Reduction in School**  
Hyeryeong Kim, 15, Freshman, Nayoung Kim, 15, Freshman, School: Buil Girls'  
Middle School, Incheon, Incheon Metropolitan City, South Korea,  
T: Gyo Jeong Ku
- EBED035T** **Bringing Back 'Sight' with 'Touch' – Making Wearable Walking Assist Device for Blind**  
Yuhwan Shin, 18, Senior, Seungmok Han, 18, Senior, Geonyeok Lee, 18, Senior,  
School: Gyeongnam Science High School, Jinju-si, Gyeongsangnam-do,  
South Korea, T: Junyeong Hong
- EGPH030T** **Design of Automatic Retractable Dome Structure Using Petal Arrangement Patterns**  
Minkyu Kim, 17, Junior, Young-Soo Na, 17, Junior, Hyunwoo Lee, 17, Junior,  
School: Incheon Academy of Science and Arts, Incheon, Incheon, South Korea,  
T: Deok han Yun
- ENEV053T** **Sustainable and Appropriate Technology System (SATS) Using Spent Mushroom Substrate for Restoring Soil Ecosystem Health**  
Sun Woo Yoo, 17, Sophomore, Chaeyeon Lim, 17, Junior, Mijoo Ryu, 17,  
Sophomore, School: Banpo High School, Seoul, South Korea,  
T: Ji-Sook Kwon
- ENMC057T** **Making 3D Printer Using Junk: Everyone Can Make!**  
Jigang Lee, 17, Junior, Geunyoung Park, 18, Senior, Juhwan Lim, 17, Junior,  
School: Daegun High School, Daegu, South Korea, T: Park Jongfeel
- PHYS011T** **Earthshine Spectrum: Earth as an Exoplanet**  
Juhong Bae, 17, Sophomore, Jeongin Park, 17, Sophomore, Jongjun Park,  
17, Sophomore, School: Daegu-il Science High School, Daegu, South Korea,  
T: Changryul Jung

- ROBO008T** **The Next Generation Multi-Robot Exploration: Biased Viewpoint Sampling via Dynamic Voronoi Space Partitioning and Receding Horizon Scheme**  
Jaeho Lee, 18, Senior, is Woochang Jung, 18, Senior, Chaeju Lee, 18, Senior, School: Korea Science Academy of KAIST, Busan, South Korea, T: Sungho Jo  
*Seoul, KOR003, Korea Science Fair*
- CHM037T** **Biocompatible Cell Encapsulation by Polyphenol Originated from Plant**  
Dae Hun Um, 18, Senior, Seok Yeong Jung, 18, Senior, School: Chungnam Science High School, Gongju Si, Chungcheongnamdo, South Korea, T: Sun Taek Kim
- ENEV058T** **A Study on the Effectiveness and Use of Freshwater Snail Waste in the Production of Agricultural Materials**  
Dongjun Ahn, 17, Junior, Sooyeon Jang, 17, Junior, Yeon Soo Choi, 17, Junior, School: Changwon Science High School, Changwon-Si, Gyeongsangnam-do, South Korea, T: Heejae Jang
- ENEV059T** **Efficient Hydrogen Sulfide Treatment by Hydrogensulfide: Fe-EDTA Fuelcell**  
Jiyul An, 17, Junior, Hong Sujin, 17, Junior, Sujung HeeJae Park, 17, Junior, School: Chungnam Science High School, Gongju-Si, Chungchungnamdo, South Korea, T: SuJung Ryu
- MATS056** **"Eye-Readable Life Saver:" Development of Palladium Tungsten Oxide (Pd-WO<sub>3</sub>) Nano-Sheet as Gasochromic Hydrogen Sensor**  
Jaewoo Heo, 17, Junior, School: Seoul International School, Seoul, Gyunggi-Do, South Korea, T: Tyler Miller
- MATS060** **Development of Lithium Ion Battery Nano-Synthesized Electrode Materials Using Fe<sub>3</sub>O<sub>4</sub> and rGO**  
Minjung Park, 18, Senior, School: Chungbuk Science High School, Cheongju-Si, Chungcheongbukdo, South Korea, T: Jinwook Kim
- SOFT044T** **The Novel Real-Time Sidewalk Direction Recognition Algorithm for Visually Impaired**  
#  
Joonsung Kim#, 18, Senior, Dongmin Kim, 19, Senior, School: Korea Digital Media High School, Ansan-Si, Gyeonggi-Do, South Korea, T: Heyeon Cho
- SPAIN**  
*Barcelona, SPN001, Exporecerca Jove*
- ENMC075** **Design of a Telepresence System to Operate at Mars Surface in a Pre-Colonial Context**  
Joel Romero Hernandez, 17, Junior, School: Institut F.X. Lluç i Rafecas, Vilanova i la Geltru, Barcelona, Spain, T: Maria Hellin Mendez
- PHYS054** **Study of the Change of the Halomass in Galaxies Depending on Their Proximity to Filaments in the Universe**  
Queralt Portell de Montserrat, 18, Senior, School: Institut Manuel Carrasco i Formiguera, Barcelona, Spain, T: Ricard Orihuela
- SRI LANKA**  
*Colombo, LKA001, Sri Lanka Science & Engineering Fair*
- EAEV070T** **Micro and Nano Engineering for Wastewater: Toxic Cr(VI) Remediation Using Biochar and Nanoparticle from Wastewater**  
Pattiyage Shehan Kavishka, 19, Senior, Alujjage Sankalpa Perera, 19, Senior, School: S. De. S. Jayasinghe Central Collage, Dehiwala, Western, Sri Lanka, T: Gayani Samarasinghe
- ENMC053** **Hydraulic Operated Vice**  
Walakuluge Sanuja Udantha Abeyawickrama, 18, Senior, School: Dharmasoka College, Ambalangoda, Galle, Sri Lanka, T: Chandana De Zoysa
- ENMC054** **Systematic Wall Constructing Tool**  
Gangodawila Kankanamalage Navodya Wishvajith Gangodawila, 16, Junior, School: Mayurapada Central College, Narammala, North Western Province, Sri Lanka, T: Nilan Liyanaarachchi



**SWEDEN***Stockholm, SWE001, Utställningen Unga Forskare***CHEM054 Infrared Spectroscopic Analysis of Spin Induced Thermochromism in  $[\text{Fe}(\text{NH}_2\text{trz})_3]\text{Br}_2 \cdot \text{H}_2\text{O}$** 

Lukas Karl Gunnar Aniansson, 19, Senior, School: Katedralskolan, Vaxjo, Kronoberg, Sweden, T: Anneli Tonnervall Laestadius

**ENMC070T Calculation and Visualization of Bicycle Traffic Flows**

Gustav Lidberg, 19, Senior, Martin Tjern, 19, Senior, School: Lugnetgymnasiet, Falun, Dalarna, Sweden, T: Gunnar Kihlberg

**PHYS055 Parallax Modelling of OGLE Microlensing Events**

Elias Waagaard, 20, Senior, School: Bromangymnasiet, Hudiksvall, Gavleborg, Sweden, T: Peter Lind

**SWITZERLAND***Bern, CHE001, Swiss Youth in Science***ROBO037 Planning, Building & Programming an Autonomous Robot**

Jack Kendall, 20, Senior, School: Stiftsschule Einsiedeln, Einsiedeln, Schwyz, T: Alfred Trutsch

**TMED024T Heart Donation after Circulatory Determination of Death: The Impact of Fatty Acids on Hemodynamic Recovery and a Future Outlook**

Jan Erik Vognstrup, 20, Senior, Lucas Busser, 21, Senior, School: Alte Kantonsschule Aarau, Aarau, Aargau, Switzerland, T: Michael Kappeler

**THAILAND***Bangkok, THA001, SST-NSM National Science Projects Competition***CHEM024T Semiconductor Cells for Photocatalytic Decomposition of Industrial Dyes Under Visible Light**

Preeyaporn Kande, 19, Senior, Nichakorn Kheawkham, 19, Senior, Pimpayom Sudcharean, 18, Senior, School: Princess Chulabhorn Science High School Pathumthani, Lad Lum Keow, Pathumthani, Thailand, T: Chutharat Chaingam

**ENEV069T Worm Feed from Palm Oil Waste**

Chatchanok Klaitaphong, 17, Senior, Nuengthida Kwandee, 17, Senior, Pathompong Muangthong, 18, Senior, School: Suratpittaya School, Suratthani, Thailand, T: Chalermporn Phongtheerawan

**MATH026T The Locus of Mid-Tangent Points of Planar Curves**

Ratthee Theerakiatsakul, 19, Senior, Napob Na Ranong, 18, Senior, Kasidetch Thanyacharoen, 19, Senior, School: Princess Chulabhorn Science High School Phetchaburi, Cha-Am, Phetchaburi, Thailand, T: Saknarin Channark

**MATS021T Bio-Absorbent from *Spondias pinnata* Gum for Pet Pads**

Thidaphon Thiyakham, 17, Junior, Nutthamon Phaiyarat, 18, Junior, Piyorose Prutisunchai, 18, Junior, School: Damrongratsongkroh School, Muangchiangrai, Chiangrai, Thailand, T: Kiettsak Inrajsadon

**MATS022T The Multifunctional Shockproof Packaging for Longer Shelf Life of Climacteric Fruits**

Pakjira Thayaeng, 17, Junior, Sireerak Dechpong, 18, Junior, Samitanan Sunantawanit, 18, Junior, School: Princess Chulabhorn Science High School Phitsanulok, Phitsanulok, Thailand, T: Natpassorn Laonet

**PLNT036T Control of Tomato Yellow Leaf Curl Disease with Biopesticide Extracted from Goat Weed *Ageratum conyzoides* Linn**

Naruephon Phaengma, 16, Sophomore, Janyaporn Kotimanusvanij, 17, Sophomore, Witchakon Nanthaikueakun, 17, Sophomore, School: The Demonstration School of Khon Kaen University (Modindaeng), Khonkaen, Thailand, T: Prapadsorn Jorngprai

**PLNT037T *Spondias pinnata* Gum Coating on Longan Fruits Can Prolong Their Freshness During Storage**

Thanakorn Yodkham#, 19, Senior, School: Damrongratsongkroh, MuangChiangrai, Chiangrai, Pawared Donloei, 19, Senior, School: Damrongratsongkroh School, Watunyoo Boonruang, 19, Senior, School: Damrongratsongkroh School, MuangChiangrai, Chiangrai, Thailand, T: Jennarong Wongsansri

- SOFT035T** **Braille Printer by Internet of Things**  
Naronggorn Booncharoen, 18, Senior, Kakkanet Suttirat, 19, Senior, Navaroot Pirungruang, 19, Senior, School: Princess Chulabhorn Science High School, Cha-Am, Phetchaburi, Thailand, T: Panupong Yiemyongwon
- Bangkok, THA002, Young Scientists Competition*
- ANIM056T** **Factors Affecting Polystyrene Foam Consuming Rate of Superworms (*Zophobas morio*)**  
Nutchawara Moonkaew, 18, Junior, Jitranooch Chairach, 18, Junior, School: Bunyawatwittthayalai School, Lampang, Thailand, T: Ratchanok Suwannajak
- ENEV051T** **Innovative Vapor Condenser Inspired by Bromeliad Plant**  
###  
Sureeporn Triphetprapa#, 17, Junior, Kanjana Komkla#, 18, Junior, Thidarat Phianchat#, 18, Junior, School: Suratpittaya School, Suratthani, Thailand, T: Suwaree Pongtheerawan
- MATS047T** **Green and Sustain Energy for Tomorrow: From Waste Vegetable Oil to Economical Iron Nanoparticles Embedded Carbon as Cathode Catalyst in Fuel Cell**  
Surayouth Phuksawattanachai, 18, Junior, Kraiphum Kerdthip, 18, Junior, School: Kamnoetvidya Science Academy, Rayong, Rayong, Thailand, T: Panuphong Pootawang
- SOFT038** **Emergency Goods Distribution Model over Finite Time Interval using Genetic Algorithm**  
Worameth Chinchuthakun, 17, Junior, School: Mahidol Wittayanusorn School, Nakhonpathom, Thailand, T: Laokhwan Ngamprasit
- TUNISIA**  
*Tunis, TUN001, Tunisia Science and Engineering Fair*
- CBIO046T** **The Revolutionary Refractometer**  
Omar Besbes, 15, Freshman, Hedi Ben Daoud, 15, Freshman, School: Lake Banks Pioneer Prep School, Les Berges Du Lac 2, Tunis, Tunisia, T: Rafik Tabbakh
- SOFT006** **ClickOnThePic.com: An Online Universal Relative-Ranking System**  
Mehdi Oueslati, 18, Junior, School: Lycee Pierre Mendes France, Tunis, Tunisia, T: Bouhaouala Balkiss
- TURKEY**  
*Ankara, TUR002, Tubitak Fair*
- CHEM060T** **The Design of Paper Based Colorimetric and Fluorescence Carbon Dioxide Sensors Adaptable to the Monitoring Process of Endotracheal Intubation**  
Burcu Ozer, 18, Senior, Elif Doga Ulugol, 18, Senior, School: Ted Ankara College Foundation Private High School, Ankara, Golbasi, Turkey, T: Demet Izgu
- EGCH041T** **Versatile Examination of the Biochar Products from Biol Mass Materials Subjected to Proliz Process**  
Emre Pahal, 18, Senior, Oguzhan Bas, 18, Senior, School: Yilmaz Kayalar Fen Lisesi, Erbaa/Tokat, Turkey, T: Ahmet Arpaci
- ENEV054T** **Production of Multipurposed Bio-Bag with the Compound of Wild *Asphodelus aestivus* Root and Residual Marble Powder**  
Necmettin Yururdurmaz, 18, Junior, Muhammed Eyyup Alma, 17, Sophomore, School: Ozel Mehmet Sait Temel Lisesi, Kahramanmaras, Onikisubat, Kahramanmaras, Turkey, T: Mehmet Sait Yilmaz
- MATH052T** **Encryption with Irrational Numbers**  
Mehmet Burak Donmez, 19, Senior, Cenk Cankesles, 19, Senior, School: Nafi Gural Fen Lisesi, Kutahya, Merkez, Turkey, T: Eray Kanpak
- ROBO043** **The Centauri Project: Using a Friendly Robot with Portable EEG Headset on Robot Operating System (ROS) for Facilitating the Lives of Paralyzed People**  
Kagan Inan, 18, Senior, School: Trabzon Akcaabat Science High School, Trabzon, Akcaabat, Turkey, T: Ali Balta
- SOFT045T** **Reaching the Individuals in the Fight Against Obesity Through Game**  
Turgut Berk Yuksek, 17, Junior, Mert Cakmaktepe, 17, Junior, School: Sivas Fen Lisesi, Sivas, Sivas, Turkey, T: Sibel Akpulat

- SOFT059T** **Fuzzy Little Television Watching Problemine Fuzzy Logic Approach**  
# Esra Topcu#, 20, Senior, Tugce Manavoglu, 19, Senior, School: Turk Telekom Mesleki ve Teknik Anadolu Lisesi, Eskisehir, Turkey, T: Sinan Ozdemir
- TMED055T** **Illegal Substance Biodetectives: Apta-Liposomes**  
Dilge Kocabas, 17, Junior, Dilara Alev Ortel, 19, Senior, School: Takev Science High School, Izmir, Narlidere, Turkey, T: Aysegul Metin

**UKRAINE***Kyiv, UKR001, Intel-TechnoUkraine*

- EGPH037** **The Converter of Three-Dimensional Oscillations into Electrical Energy**  
Valeriia Tyshchenko, 17, Sophomore, School: Kherson Physical and Technical Lyceum of Kherson City Council Affiliated to National University of Dnipropetrovsk, Kherson, Ukraine, T: Mykhailo Rastogin
- MATH050** **The Application of the Complex Numbers to Solve Diophantine Equations by Finding the Relations Between the Coefficients**  
Yuliia Suprun, 16, Sophomore, School: Municipal Institution Sumy Specialized School of I-III Levels Named After the Hero of the Soviet Union O. Butko, Sumy, Ukraine, T: Alyona Azarenkova
- ROBO038** **The Two-Stage Cognitive System for Teaching Robots**  
Vladyslav Maksymovych Marchenko, 17, Junior, School: Lviv Physics and Mathematics Lyceum, Lviv, Ukraine, T: Serhiy Rykhlyuk

*Kyiv, UKR002, Intel-EcoUkraine*

- EGCH042T** **The New Solid State Mechanochemical Synthesis of Advanced Ni, Ni-Co and Ni-Al Hydroxides for Hybrid Supercapacitor Application**  
Kseniia Kovalenko, 16, Sophomore, Illia Samsonov, 16, Sophomore, School: Chemical Ecological Lyceum, Dnipro, Dnipropetrovsk Region, Ukraine, T: Vadym Kovalenko
- ENEV070** **Retrofit System for Smart Reduction of Detergent Usage by Washing Machines**  
Anastasiia Livochka, 17, Junior, School: Lviv Lyceum of Technology, Lviv, Ukraine, T: Victor Koldun

**UNITED ARAB EMIRATES***Abu Dhabi, ARE002, Think Science Competition*

- CHEM071T** **Extraction of Lanthanides from Electronic Waste Using Zeolite Prepared from Low Coast Precursors**  
Saeed Yousef Almqbaali, 15, Sophomore, Ahmed Ateeq Alqemzi, 16, Sophomore, School: Sweihan School, Al Ain, United Arab Emirates, T: Abdeltawab Ali
- CHEM072T** **Chemical Fog Dispersion Technique**  
Abdulla Obaid Alsuwaidi, 18, Senior, Abdulla Arif Almheiri, 16, Senior, School: Al Ittihad Private School - Al Mamzar, Dubai, United Arab Emirates, T: Nabil Gharbaoui
- EGCH049** **Graphene Based Solar Panel**  
Salama Rashed Alkhateri, 16, Junior, School: Al Khaleej National School, Dubai, United Arab Emirates, T: Ghaleb Wahbi
- ENEV082T** **Moringa Filter**  
Fatema Naser Alhosani, 16, Sophomore, Khawla Abdalla Alhammadi, 15, Sophomore, School: International School of Creative Science, Sharjah, Sharjah, United Arab Emirates, T: Abir Obeid
- ENEV083T** **Newspaper Cuttings from Garbage to Gold**  
Rashed Wassim Kabbani, 16, Junior, Mohammad Abdulredha Abualhassan, 16, Junior, Abdulrahman Ali Abutalib, 16, Junior, School: Al Ittihad Private School - Jumeirah, Dubai, United Arab Emirates, T: Lara Chouman
- ENMC080** **Green Belt**  
Sharena Mohamed Alremeithi, 17, Senior, School: International Community School, Abu Dhabi, United Arab Emirates, T: Muhammad Usman Farooq

**UNITED KINGDOM***Liphook, Hampshire, GBR003, Young Engineers for Britain*

- EBED051 Piezoelectric Based Pressure Sensing Matrix Array**  
Shahab Fazal, 18, Senior, School: Loreto College, Manchester, Lancashire, United Kingdom, T: Zaphira Kambouris
- ENMC076 Thermoelectric-Evaporative Cloud Chamber**  
Finlay James Joseph Cuffe, 19, Senior, School: Sutton Grammar School, Sutton, Surrey, United Kingdom, T: Jamie Costello

**UNITED STATES OF AMERICA****ALASKA***Anchorage, USAK50, Alaska Science and Engineering Fair*

- BEHA064 Do Wages Affect Scientific Learning? Evidence from the Programme for International Student Assessment**  
Dawson Alexander Verley, 18, Senior, School: West Valley High School, Fairbanks, Alaska, T: Joe Little
- EAEV040 A Longitudinal Study of Fluctuating Radiation Levels in Prince William Sound, Alaska: A Conclusion to a Four Year Study**  
#  
Jedediah Emmet Dean, 19, Senior, School: Colony High School, Palmer, Alaska, T: Dorrie Dean

**ALABAMA***Auburn, USA01, Greater East Alabama Regional Science and Engineering Fair*

- EBED013 Battery System Optimization and Development of a Novel Rapid-Response Bioelectronics Device**  
###  
Rahul Lall, 18, Senior, School: Auburn High School, Auburn, Alabama  
T: Jacque Middleton
- ENEV027 The Development of an Algorithm Through the Assessment of Nutrients in a Recycled Food Supplement for Canines to Reduce Waste Production**  
#  
Alexis Lauren Jones, 18, Junior, School: Auburn High School, Auburn, Alabama, T: Mark Jones

*Birmingham, USA02, Central Alabama Regional Science and Engineering Fair*

- BEHA022 Central Nervous System Sensitization Is Associated with Chronic Pain in HIV**  
Tyler Huang, 19, Senior, School: Alabama School of Fine Arts, Birmingham, Alabama, T: Hungsin Chin
- CELL050 Retain CHD7, an Epigenetic Regulator, in the Nucleus to Combat Breast Cancer Metastasis**  
#  
Kenneth Jiao, 17, Junior, School: Indian Springs School, Pelham, Alabama, T: Tanya Hyatt

- EAEV016 Impact of Ocean Acidification on Relative Fitness and Interspecies Interactions of Picophytoplankton**  
#  
Margaret Amelia Knight, 18, Senior, School: Alabama School of Fine Arts, Birmingham, Alabama, T: Hungsin Chin

- MCRO055T Probiotic Metabolites Promote Anti-Inflammatory Functions of Immune Cells**  
Richard Hong Fu, 17, Junior, Danielle Chen Wu, 17, Junior, Schools: Vestavia Hills High School, Vestavia Hills, Alabama, Indian Springs School, Indian Springs, Alabama, T: Katherine Scheirer, Christina Tetzlaff

*Huntsville, USA03, North Alabama Regional Science and Engineering Fair*

- CELL017 Drosophila melanogaster's Mutant Reaction to UV Radiation with a Link to the p53 Gene**  
Katelin Marie Baird, 18, Senior, School: James Clemens High School, Madison, Alabama, T: Carol Bohatch
- EBED018 Epi-Phone Auto-Locator**  
Maya Arie Van Houten, 16, Sophomore, School: Covenant Christian Academy, Huntsville, Alabama, T: Rhonda Lisauckis
- EBED022 Highly Sensitive E. coli Bacteria Detection Through the Integration of Gold Nanodisk Plasmon Resonance and Antibody-Antigen Binding**  
Sophie Joy Guo, 17, Junior, School: James Clemens High School, Madison, Alabama, T: Carol Bohatch

Mobile, USAL04, Mobile Regional Science Fair

**CELL034 The Synergistic Effect of Imatinib and Allicin: A Potential Therapeutic for BCR-ABL1-Positive Leukemia**

# Jamie Lim, 17, Junior, School: Murphy High School, Mobile, Alabama, T: Julie Prerost

**EAEV066 Goo Be Gone! Cleaning Up Oil Spills with Magnets and Nanotechnology**

Vanessa Stephanie Siggers, 16, Freshman, School: Murphy High School, Mobile, Alabama, T: Marcia McCants

**MCRO063 Tracking Seasonal Changes of Specific Pathogenic Bacteria Around Mobile Bay**

Leanne Jeong, 17, Junior, School: Alabama School of Mathematics and Science, Mobile, Alabama, T: Natalie Ortell

Livingston, USAL05, West Alabama Regional Science Fair

**ENMC020 Composites: Transforming T-Beams**

## Danika Louw, 18, Senior, School: Holy Spirit Catholic High School, Tuscaloosa, Alabama, T: Deborah Samaniego

Huntsville, USAL50, Alabama Science and Engineering Fair

**EAEV067 Factors Affecting the Discharge of Micro-Plastic Fibers from Household Laundry**

Noel Katherine Lange, 16, Sophomore, School: Auburn High School, Auburn, Alabama, T: Jacque Middleton

**MATS073 Shear Radial Strength: Combining Web Geometry with Shear Thickening Fluids to Create a Better Body Armor**

Lucas Carey Lynn, 18, Junior, School: Wetumpka High School, Wetumpka, Alabama, T: Virginia Vilaridi

**PHYS050 Astronomical Image Processing: A Novel Application of Image Processing Aimed at Asteroid Detection**

Tucker Edison Honeycutt, 17, Sophomore, School: Covenant Christian Academy, Huntsville, Alabama, T: Rhonda Lisauckis

**TMED046 ABT263 (Navitoclax) and the IPF-Treatment Drugs for a Healthier Aging**

Hemant Srivastava, 18, Senior, School: Alabama School of Fine Arts, Birmingham, Alabama, T: Susan Lagrone

## ARKANSAS

Little Rock, USAR01, Ouachita Mountains Regional Science & Engineering Fair

**BMED013 Searching for Biomarkers of Diabetic Nephropathy using Proton NMR Metabolomics**

Ally Grace Puckett, 19, Senior, School: Poyen High School, Poyen, Arkansas, T: Amanda Jones

**CHEM036 Detection of Nitroaromatic Pollutant Using Nanoparticle Sensor**

Yusuf Khan, 16, Sophomore, School: Benton High School, Benton, Arkansas, T: Donna Smith

Fayetteville, USAR03, Northwest Arkansas Regional Science and Engineering Fair

**BCHM009 Is Tiny Mighty? Phase II**

Payton Danielle Scrivner, 17, Junior, School: Alma High School, Alma, Arkansas, T: Tiffany Scrivner

**CBIO011 Advancing Microarray Technology: Efficient Design of Sequence Libraries Covering All k-mers with Degenerate Characters to Improve Interaction Measurement**

Ryan Ki-Hoon Kim, 17, Senior, School: Fayetteville High School, Fayetteville, Arkansas, T: Cameron Simpkins

**MCRO007 How Does Dandelion Affect *E. coli*?**

Zhiwen Xu, 17, Sophomore, School: Fayetteville High School, Fayetteville, Arkansas, T: Cameron Simpkins

Jonesboro, USAR04, Northeast Arkansas Regional Science Fair

**BEHA023 Word Crimes: A Study on Bias, Justice, and Compassion**

Alyson Elaine Marie Nichols, 18, Junior, School: Nettleton High School, Jonesboro, Arkansas, T: Jana Hudspeth

**CHEM025 A Very Tense Subject**

Alex Hamilton Scharein, 15, Freshman, School: Rural Special High School, Fox, Arkansas, T: Chafin Pitcock

- PLNT021** **Analyzing the Effects of Anionic Polyacrylamide on Row Crop Health and Emergence**  
 ###  
 Darrin Andrew McFall, 19, Senior, School: Buffalo Island Central High School, Monette, Arkansas, T: Kristen Thomas  
*Little Rock, USAR05, Central Arkansas Regional Science and Engineering Fair*
- BMED014** **Apoptotic Activity of Diallyl Trisulfide in Cancer Cells**  
 Sakshi Garg, 15, Freshman, School: Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley
- EAEV012** **Use of Waste Carbon Dioxide as a Renewable Reagent to Catalytically Synthesize Commercially Useful Cyclic Carbonates**  
 Meghana Chowdary Bollimpalli, 16, Sophomore, School: Little Rock Central High School, Little Rock, Arkansas, T: Katie Anderson
- EGCH007** **Economical Oxygen Reduction Electrocatalysts: Alternatives to Platinum for Proton Exchange Membrane Fuel Cells**  
 Anusha Bhattacharyya, 16, Sophomore, School: Little Rock Central High School, Little Rock, Arkansas, T: Mary Parson
- TMED005** **Finding a Cure for Zika: Antiviral Effects of PI3 Kinase Inhibitors**  
 #  
 Jennifer Zhang, 16, Sophomore, School: Little Rock Central High School, Little Rock, Arkansas, T: Mary Parson  
*Monticello, USAR06, Southeast Arkansas Regional Science Fair*
- MCRO021** **Tiny Titans: Induced Sporulation of *Bacillus anthracis***  
 Jeremy Turner Cotton Ward, 18, Junior, School: Ridgway Christian High School, Pine Bluff, Arkansas, T: Diedre Young  
*Hot Springs, USAR07, West Central Regional Science fair*
- EAEV010** **Groundwater Quality of the Aquifers Underlying the Mississippi Embayment and the Gulf Coastal Plain**  
 Krishna K. Patel, 18, Senior, School: Arkansas School for Mathematics, Sciences, and the Arts, Hot Springs, Arkansas, T: Lindsey Waddell
- MATH017** **Optimizing the Search for Mersenne Primes**  
 Carson Scott Cato, 18, Senior, School: Arkansas School for Mathematics, Sciences, and the Arts, Hot Springs, Arkansas, T: Nikki Kennedy
- SOFT010** **Variable Density Cubic Infill for Fused Filament Fabrication**  
 Martin James Boerwinkle, 18, Senior, School: Arkansas School for Mathematics, Sciences, and the Arts, Hot Springs, Arkansas, T: Nicholas Seward  
*Conway, USAR50, Arkansas State Science Fair*
- CELL047** **The Effects of Western Diet on Sarco/Endoplasmic Reticulum Ca<sup>2+</sup>-ATPase Expression and Calcium Dysregulation in the Brain**  
 Sarah Shirley, 16, Sophomore, School: Little Rock Central High School, Little Rock, Arkansas, T: Lee Conrad
- CHEM038** **Toxic Residues and Unsuspecting Clients: Developing a Test Kit for Identifying Illicit Laboratory Wastes**  
 Rebecca Parham, 18, Senior, School: Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Brian Monson
- EAEV052** **A Study of the Mineralogy and Texture of the Hot Springs Sandstone**  
 Tristan Bailey Tompkins, 18, Senior, School: The Arkansas School for Mathematics, Sciences, and the Arts, Hot Springs National Park, Arkansas, T: Lindsey Waddell
- EBED032** **Real-Time Sound Localization Using a Microphone Array**  
 Joseph Aldo Sartini, 19, Senior, School: Arkansas School for Mathematics, Sciences, and the Arts, Hot Springs, Arkansas, T: Nicholas Seward
- ENMC058** **Designing a Scalable 3D Printer with a Novel Elevation System**  
 Liam Fitzpatrick Johnson, 19, Senior, School: Arkansas School for Mathematics, Sciences, and the Arts, Hot Springs, Arkansas, T: Nicholas Seward
- MCRO048** **Cutaneous Skin Bacteria: A Search for Antifungal Activity**  
 Taylor Michelle Mosley, 18, Senior, School: Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Whitney Holden

**ARIZONA***Sierra Vista, USAZ02, SSVEC's Youth Engineering and Science Fair***ENMC015T Electric Jet Engine**

Adam Skora, 19, Senior, Taylor Ann Benning, 19, Senior, School: Buena High School, Sierra Vista, Arizona, T: Mark Goldie

**MATS032 Oh Crack**

Kristi Ann Webster, 18, Junior, School: Willcox High School, Willcox, Arizona, T: Ty White

*Tucson, USAZ03, Southern Arizona Research, Science and Engineering Fair***ANIM036 Effects of Two Pesticides on Expression of Genes Related to Energy Metabolism in Honey Bees (*Apis mellifera*)**

Waris Margarite Anderson, 18, Junior, School: Tucson High Magnet School, Tucson, Arizona, T: Margaret Wilch

**ANIM039 The Effect of Nosema on the Honey Bee's Brain**

Natalia Noel Jacobson, 18, Junior, School: Empire High School, Tucson, Arizona, T: Hillary Ward

**EAEV053 A Novel, Cost-Effective Water Filtration and Desalination Technique Based on Biodegradable Superabsorbent Polymers**

# Joseph Galasso, 17, Junior, School: Galasso Homeschool, Tucson, Arizona, T: Sandra Galasso

**EAEV061 The Ultimate Fate of Perfluoroamines in the Atmosphere**

Peace Mutwiri, 18, Senior, School: University High School, Tucson, Arizona, T: Pamela Tautz

**ENEV055 Analyzing the Practical Application of Filtering Pb 2+ Using Freshwater Algae, Phase Four**

## Amanda Catherine Minke, 18, Senior, School: Immaculate Heart High School, Oro Valley, Arizona, T: Danielle Abrames

**MATH029 A Novel Approach to Collatz Conjecture Proof: Effect of Addition on Prime Factorization and Unique Numeric Potential Concept**

Matt Fosdick, 15, Freshman, School: Empire High School, Tucson, Arizona, T: Hillary Ward

**PLNT038 Mistletoe on Novel Hosts**

Seneca Riley Blank, 17, Junior, School: Tucson High Magnet School, Tucson, Arizona, T: Margaret Wilch

**TMED058 Ameliorating Alpha-Synuclein Aggregation in Parkinson's Using Optimized Chaperones: An *in silico* Approach**

### Jeremiah Thomas Pate, 19, Senior, School: BASIS Oro Valley, Oro Valley, Arizona, T: Tommaso Cioni

*Phoenix, USAZ50, Arizona Science and Engineering Fair***ANIM054T Developing a Novel 3D-Printed Solution to Aid Healing Fractured Wing Bones of Wild Birds**

# Jeremy Chen-Hao Wang, 16, Freshman, Meena Niveda Ravishankar#, 16, Freshman, Vishakk Rajendran, 15, Freshman, Schools: Catalina Foothills High School, University High School, BASIS Tucson North, Tucson, Arizona, T: Rajendran Subramaniam

**BCHM031T Developing a Nanoscale DLD Array Using Immunosignature-Derived Aptamers to Effectively Separate and Analyze Tumor Exosomes**

Sachin Jaishankar, 17, Junior, Somil Jain, 18, Junior, School: Hamilton High School, Chandler, Arizona, T: Raxha Bhagdev

**BEHA058T A Novel Way to Determine Sociometrics in the Real World**

Nicole Boucher, 18, Senior, Natasha Ganesh, 18, Senior, School: Hamilton High School, Chandler, Arizona, T: Raxha Bhagdev

**CBIO042 Modifying and Applying the kth Nearest Neighbor Algorithm to Enhance the Classification of Breast Cancer Tumors**

Rohit Khurana, 16, Sophomore, School: Brophy College Preparatory, Phoenix, Arizona, T: Patricia Mazier

**EAEV076 Population Dynamics in *D. magna* When Exposed to Minute Concentrations of Silica Gels**

Carl Arthur Whitesel, 18, Senior, School: Arizona College Preparatory- Erie, Chandler, Arizona, T: Kristi Glassmeyer

- EBED048** **A Low-Cost, Clutter-Cancelling Life Detection System for First Response After Natural Disasters**  
# Sachin Ganesh Konan, 17, Junior, School: Hamilton High School, Chandler, Arizona, T: Debbie Nipar
- EGCH047** **Symbiotically Grown Algal-Fungal Cultures for Economically Feasible and Sustainable Biofuel Production**  
## McKenna Kristin Loop, 18, Senior, School: Arizona College Preparatory–Erie, Chandler, Arizona, T: Kristi Glassmeyer
- ENMC066** **A Novel Approach to Prevent Damage from Earthquakes and Tsunamis with the Utilization of a Proportional Surface Hexagonal Structure and Modified Underground Two-Part Hexagonal Damping Rubber Bearing Base Isolator**  
Daniel Noon, 15, Freshman, School: Brophy College Preparatory, Phoenix, Arizona, T: Patricia Mazier
- ENMC071** **Using 3D Printing for the Fabrication of Gas Dynamic Virtual Nozzles**  
Daniel Fay, 18, Senior, School: Mesquite High School, Gilbert, Arizona, T: Richard Kirian
- MATH047** **Investigating Novel Analysis by Benford Methodology for Fraud and Anomaly Detection**  
Anish Raju, 15, Freshman, School: BASIS Chandler, Chandler, Arizona, T: Vidya Ananthnarayan
- MATS064** **Biocompatible Gold Nanorod-Embedded, Crosslinked Collagen Composites for Surgical Applications: Synthesis and Characterization**  
Sachin Subramanian, 17, Junior, School: BASIS Chandler, Chandler, Arizona, T: Vidya Ananthnarayan
- PHYS051** **A Linked Learning Approach to Automated Galaxy Morphology Classification**  
# Zhengdong Wang, 19, Senior, School: Hamilton High School, Chandler, Arizona, T: Debbie Nipar
- SOFT047** **A Computational Approach to Predicting College Player Success in the NBA**  
Shardul Kothapalli, 17, Junior, School: Hamilton High School, Chandler, Arizona, T: Debbie Nipar
- SOFT053** **An Investigation and Computer Simulation on the Temperature Dependence for Hall Mobility and Quality Factor in GaAs**  
# Zachary Scott Rolfness, 18, Junior, School: Paradise Valley High School, Phoenix, Arizona, T: Phillip Howardell
- TMED057** **Characterization of Patient-Derived Glioblastoma Cell Lines**  
## Ritika Bharati, 18, Senior, School: Hamilton High School, Chandler, Arizona, T: Raxha Bhagdev
- CALIFORNIA**  
*Costa Mesa, USCA01, Orange County Science and Engineering Fair*
- BEHA029** **Evaluation of Gender Bias in Social Media Using Artificial Intelligence**  
Nitya Parthasarathy, 17, Junior, School: Northwood High School, Irvine, California, T: John Olivares
- CBIO022** **A Novel Approach to Solve Target Mutation-Induced Drug Resistance for HIV-1 Fusion Inhibitors with the Hopfield Neural Network**  
# Michelle Chushan Xu, 17, Junior, School: Arnold O. Beckman High School, Irvine, California, T: Charles Beilin
- CBIO027** **Quantification of Binding Free Energies in Amyloid-Antibody Systems Related to Alzheimer's and Enhancement of Antibody Binding Affinities**  
Jennifer Rose Pan, 17, Junior, School: Arnold O. Beckman High School, Irvine, California, T: Siu-Ling Sit
- ENEV044** **Efficient Removal of Pb<sup>2+</sup>, Cd<sup>2+</sup>, and UO<sup>2+</sup> from Water Through Sustainable Nano Cellulose Coagulants Synthesized Through One Step Modification of Raw Biomass**  
Aurnov Chattopadhyay, 19, Senior, School: University High School, Irvine, California, T: David Knight
- MATS039** **Nanofabrication and Electroanalysis of Carbon-MEMS: A Suspended Nanometric Gap for Sensitive Biosensing**  
Suryaprakash Vengadesan, 17, Junior, School: Irvine High School, Irvine, California, T: Joan Elliott



- SOFT026** **Lumos: Automated Smartphone-Based Ophthalmic Screening for Glaucoma Using Computer Vision and Deep Learning Algorithms Through Low-Cost and Non-Mydriatic Retinal Fundus Imaging**  
Shalin Vipul Shah, 18, Senior, School: Tesoro High School, Las Flores, California, T: Christina Migge  
*Los Angeles, USCA02, Los Angeles County Science and Engineering Fair*
- CBIO043T** **Sustainability of *Katsuwonus pelamis* in California Pelagic Fisheries: Analysis of Natural and Fishing Mortality Data**  
Daniel Samik Rostamloo, 16, Sophomore, Marat Mustafaev, 16, Sophomore, School: Anderson W. Clark Magnet High School, La Crescenta, California, T: Dominique Evans-Bye
- CELL040** **Impact of Substance Use on Salivary Cytokine Levels in Healthy Female Individuals**  
Miranda Li, 17, Junior, School: Crescenta Valley High School, La Crescenta, California, T: Orenda Tuason
- ENBM055** **A Fully-Integrated and Self-Contained Lab-On-A-Chip Device for Sample Preparation, RNA Amplification, and Detection for Disease Diagnostics**  
Benjamin Cheung Liu, 16, Sophomore, School: Arcadia High School, Arcadia, California, T: Craig Monden
- ENEV050** **Utilization of Triglycerides from Spent Coffee Grounds to Create Methyl Esters Through Transesterification**  
Regina Elizabeth Lee, 18, Senior, School: Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- ENEV056** **Bio-Accumulation of Oil by *Aurelia aurita* Mucus**  
Karina Bjazevic, 18, Senior, School: Palos Verdes Peninsula, Rolling Hills Estates, California, T: Peter Starodub
- MCRO041** **Pyrimidine Derivatives Conjugated to Gold Nanoparticles to Combat Antibiotic Resistance**  
Titash Biswas, 17, Junior, School: Crescenta Valley High School, La Crescenta, California, T: Orenda Tuason  
*Fresno, USCA03, Fresno County Science Fair*
- CHEM026** **Improving Photoelectrochemical Decomposition of Water Using Earth Abundant Metal Oxide Catalysts**  
Jake Bringetto, 15, Freshman, School: Clovis West, Fresno, California, T: Wayne Garabedian
- ENBM025T** **SmartRate: An Innovation in Automated Early Warning, Detection, and Prevention of Cardiac Death**  
Sameer Sundrani, 17, Junior, Nikhil Sundrani, 16, Sophomore, School: University High School, Fresno, California, T: Brenda Royce
- ENMC029** **An Altitude Control System for Long Duration, High Altitude Balloon Flights**  
Natalie Celeste White, 15, Freshman, School: University High School, Fresno, California, T: Steven White
- ROBO015** **Safecopter: Developing a Collision Avoidance System Based on an Array of Time-of-Flight 3D Cameras**  
# Robert Gabriel Tacescu, 17, Junior, School: Clovis North High School, Fresno, California, T: Matthew Carter  
*Sacramento, USCA04, Sacramento Regional Science and Engineering Fair*
- EBED023** **ResQ: A Low Cost, Wearable, Automatic Fall Detection Device for Senior Citizens**  
Arya Vikranth Goutam, 17, Sophomore, School: The Nueva School, San Mateo, California, T: Jennifer Selby
- PLNT039** **The Reversal of Harms Done by the Drought: How the Carbon and Nitrogen Levels Affect *Fusarium oxysporum f.sp. Lycopersici* Race 3 in Soils to Impact *Solanum lycopersicum* (Tomato) Plant Growth**  
# Teevyah Yuva Raju, 17, Junior, School: Mira Loma High School, Sacramento, California, T: Rochelle Jacks
- ROBO020** **Autonomous Off-Road Vehicle Using Computer Vision for Surveillance Applications**  
Guadalupe Bernal, 16, Sophomore, School: Folsom High School, Folsom, California, T: Tyler Johnstone

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

- BMED035** **Cytosine to Thymine: Unveiling Cancer's Achilles Heel via a Genome-Wide Discovery of CpG Methylation Signatures**  
Daniel Danxu Zhang, 18, Junior, School: Westview High School, San Diego, California, T: My-Nga Ingram
- CELL018** **Role of Circular RNAs in *Drosophila* Innate Immunity**  
Julia Situ, 16, Sophomore, School: Canyon Crest Academy, San Diego, California, T: Ariel Haas
- ENBM058** **Diagnosing the Puzzle of Autism: A Wearable Micro-Movement Sensing Cap for Early Pediatric Screening**  
# Samuel Ferguson, 18, Senior, School: Christian Unified High School, El Cajon, California, T: Kimberley Ferguson
- PHYS029** **Quick Aligning Telescopes**  
Dominic Catanzaro, 17, Senior, School: Cathedral Catholic High School, San Diego, California, T: Marjan Rafie
- PLNT060** **Novel Methods of Augmenting Plant Pollination**  
Paul R. Gauvreau, 17, Junior, School: Canyon Crest Academy, San Diego, California, T: Ariel Haas
- TMED018T** **Metabolic Analysis as a Method of Breast Cancer Diagnosis**  
Jason Scott Provol, 19, Senior, Matthew Henry Bronars, 19, Senior, School: Scripps Ranch High School, San Diego, California, T: Elaine Gillum

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

- CBIO028** **Combating Neurovirulence of Zika and Flavivirus Epidemics Using *in silico* Phylogenetic Analysis and RNAi Gene Silencing**  
Mythri Ambatipudi, 17, Junior, School: Saint Francis High School, Mountain View, California, T: Linda Segal
- CBIO045** **Deep Learning Assessment of Tumor Proliferation in Histopathological Images for Categorical and Molecular Breast Cancer Severity Diagnosis**  
# Manan Ajay Shah, 18, Senior, School: The Harker School, San Jose, California, T: Chris Spenner
- CBIO047** **ALZCan: A Statistical Machine Learning Based Framework to Predict Future Onset of Alzheimer's Disease Using Genome-Wide Association Analyses, Polygenic Risk Scoring, and Multiple Neuroimaging Modalities (rs-fMRI, FDG-PET, Florbetapir-PET)**  
Pravin Ravishanker, 18, Senior, School: Bellarmine College Preparatory, San Jose, California, T: Rod Wong
- CHEM043** **Predicting the Efficiency of Chaotic Mixing of Granular Pharmaceutical Materials Using Image Processing**  
Labanya Mukhopadhyay, 17, Junior, School: Evergreen Valley High School, San Jose, California, T: Scott Lubbs
- ENBM049** **Toward Precision Medicine: Designing Injectable, Conductive Graphene-Doped Hydrogels and Robust Computational Models for Post-MI Cardiac Tissue Engineering and Drug Discovery**  
Arvind Parasuram Sridhar, 19, Senior, School: Bellarmine College Preparatory, San Jose, California, T: Debjani Roy
- MATH040** **Efficient Point-Counting Algorithms for Superelliptic Curves via the Cartier Operator and the Hasse-Weil Bound**  
Matthew Manchung Keisuke Hase-Liu, 18, Senior, School: Lynbrook High School, San Jose, California, T: Jason Lee
- ROBO028T** **Mitosis Detection and Tumor Grading Using Deep Convolutional Neural Networks**  
Anika Cheerla, 16, Sophomore, Nikhil Cheerla, 18, Senior, School: Monta Vista High School, Cupertino, California, T: Debbie Frazier
- ROBO031** **Unlocking History: An Algorithm to Virtually Unfold 3D Computed Tomography Scans of Unopened Historical Documents**  
# Holly Marie Jackson, 17, Junior, School: Notre Dame High School San Jose, San Jose, California, T: Lisa Yi
- ROBO032** **Deep Learning-Based Automated Tool Detection and Analysis of Surgical Videos to Assess Operative Skill**  
Amy Yue Jin, 17, Junior, School: The Harker School, San Jose, California, T: Eric Nelson

- SOFT032** **Developing a Predictive Model for On-Campus Crime Using Machine Learning Algorithms and Reporting Via Mobile App**  
Aratrika Ghatak, 17, Junior, School: Evergreen Valley High School, San Jose, California, T: Benjamin Higgins
- Contra Costa County, USCA08, Contra Costa County Science and Engineering Fair*
- EBED050** **Less Water—More Food?: Real-Time Three-Dimensional Imaging of Soil Moisture Distribution for Intelligent Irrigation**
- ##** Vasily Antonovich Tremsin, 18, Junior, School: Campolindo High School, Moraga, California, T: Betty Watson
- MCRO061T** **The Effect of the Wavelength of Light on the Growth Rate of Cyanobacteria and Its Survival in a Martian Atmosphere**  
Catherine Pelangi Aitken, 15, Freshman, Dana Zhao Jian, 15, Freshman, School: San Ramon Valley High School, Danville, California, T: Gillian Rhett
- SOFT023** **PrediMed: Predicting Health with a Custom-Built Machine Learning Ensemble**
- #** Alexander Zlokapa, 18, Senior, School: Golden Hills Academy, Danville, California, T: Mary Jane Zlokapa
- Pleasanton, USCA09, Synopsys Alameda County Science & Engineering Fair*
- EGPH013** **Development of a Non-Tracking Solar Thermal Concentrator Using the Simultaneous Multi-Surface Design Method**  
Anthony Y. Zhou, 16, Sophomore, School: Mission San Jose High School, Fremont, California, T: Ling-Ru Kuei
- ENBM026T** **Accurate, Low-Cost Diagnosis and Monitoring of Parkinson's Disease by Detecting Dysphonic Features through a Machine-Learning Algorithm**  
Rishik Kundhur Reddy, 15, Freshman, Parth Saxena, 15, Freshman, Shiladitya Dutta, 15, Freshman, Schools: Amador Valley High School, Foothill High School, Pleasanton, California, T: Clif Simms
- MATS025** **Developing a Novel Flexible MoS<sub>2</sub> Biosensor to Detect Lower-Concentrated Area of Biological Molecules at the Femtomolar Level**  
Erika Yang, 17, Junior, School: Granada High School, Livermore, California, T: Amanda Cleveland
- PHYS026T** **Using a Novel Methodology to Constrain the Supermassive Black Hole-Galaxy Coevolution and Analyze the Selection Bias**  
Sahil Hedge, 18, Senior, Shawn Brian Zhang, 17, Junior, Schools: Amador Valley, Pleasanton, California, Prospect High School, Saratoga, California, T: Aldo Rodriguez-Puebla
- TMED019** **Machine Learning Tool for Accurate, Cost-Effective, and Rapid Prediction of Small Cell Lung Cancer Stage: Significantly Increase Patient Survival in One Minute**
- #** Jessika Baral, 18, Senior, School: Mission San Jose High School, Fremont, California, T: Julien Sage
- Palos Verdes Peninsula, USCA10, Palos Verdes Peninsula Unified School District Science and Engineering Fair*
- EBED024** **Increasing Wifi Signal Strength Using a Phased Array Helical Antenna System**  
Alisa Yukina Hathaway, 17, Junior, School: Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- ENEV031** **Development of a Household Direct-Steam-Generation Solar-Powered Water Recovery System, Year II**  
Anna Christine Benedict, 18, Senior, School: Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- Santa Cruz, USCA11, Santa Cruz County Science and Engineering Fair*
- ANIM044T** **Effects of Varroa Mite Treatments on Bee Memory and Learning**  
Jackson K. Damhorst, 15, Freshman, Max Freedman, 16, Sophomore, School: Alternative Family Education, Santa Cruz, California, T: Patty Freedman
- Seaside, USCA12, Monterey County Science and Engineering Fair*
- EAEV035** **Using Dropsonde Descending Speed to Determine Vertical Air Velocity in a Hurricane**  
Megan Taiyue Tang, 17, Junior, School: York School, Monterey, California,

- T: Pamela Durkee
- EAEV036** **Phototactic Analysis of the Effects of the Chemorepellent Nitrate on Taxis-Based Vertical Column Orientation in Phytoplanktonic Flagellates**  
# Rohan Bhushan, 17, Junior, School: Monterey High School, Monterey, California, T: Jason Nicholson
- PLNT026** **Investigation of the Disparity Between the Abundance of *Tamalia* spp. Galls on *Arbutus unedo* and *Arctostaphylos* spp.**  
Kadenayne Thabet Agha, 17, Junior, School: York School, Monterey, California, T: Pamela Durkee
- San Bernardino, USCA13, San Bernardino, Inyo, Mono, (SIM) Science and Engineering Fair*
- CELL051** **The Effect of Tocotrienol on Apoptosis**  
Nadley Aisuan, 17, Junior, School: Rialto High School, Rialto, California, T: Guadalupe Valero
- CHEM073** **Synthesis of Iron Oxide Nanorods**  
# Andrea Lynn Noronha, 17, Senior, School: Redlands High School, Redlands, California, T: Colleen Duncan
- ENMC072** **Stepping into the Future**  
Ryan Macayan Ramsey, 18, Senior, School: Rialto High School, Rialto, California, T: Guadalupe Valero
- Riverside, USCA15, Riverside County Science and Engineering Fair*
- CBIO033** **Using Machine Learning to Predict Postprandial Blood Glucose in Type 1 Diabetics**  
Kimberly Ann Stahovich, 16, Sophomore, School: John W. North High School, Riverside, California, T: Hannah Geiger
- MATS054** **Using Specific Heat Capacity to Engineer a Thermal Evacuation Suit to Address Heat Transfer Processes**  
Nick Perez, 16, Freshman, School: Temescal Canyon High School, Lake Elsinore, California, T: Julie Beckius
- PLNT050** **Developing Rapid Technologies to Access Root Cell-Type Specific Gene Regulation in Rice (*Oryza sativa* L.)**  
Yushan Su, 17, Junior, School: Martin Luther King High School, Riverside, California, T: Michele Hampton
- San Mateo County, USCA16, San Mateo County Office of Education STEM Fair*
- ENBM080** **Investigation of a Novel Saccade-Based Diagnostic for Rapid Concussion Detection**  
Helen Gordan, 19, Senior, School: Menlo-Atherton High School, Atherton, California, T: Lyndia Wu
- Los Angeles, USCA50, California State Science Fair*
- MCRO068** **Cell Membrane-Coated Nanodevice for Anti-Virulence Therapy Against Antibiotic Resistant Bacteria**  
Maggie Chen, 17, Junior, School: Canyon Crest Academy, San Diego, California, T: Ariel Haas
- ENEV084** **Testing Seed Viability after Imbibition of Produced Water Treated with Enzyme Additive to Bioremediate Residual Toxins**  
Alana Tessman, 16, Junior, School: Kern Valley High School, Lake Isabella, California, T: John Erickson
- ENBM085** **Novel Nanoscale Approach to Combat Disease: Electrically Stimulated Drug Release from Biodegradable PCL Nanofilms**  
Rohan Mehrotra, 16, Junior, School: Lynbrook High School, San Jose, California, T: Jason Lee
- BMED082** **Effects of Gut Microbiota on *Drosophila* Models of Parkinson's Disease**  
Vivek Kamarshi, 16, Sophomore, School: Monta Vista High School, Cupertino, California, T: Renee Fallon
- EAEV092** **Effects of Ocean Acidification on Primary Consumers in a Marine Ecosystem**  
Titus Patton, 17, Senior, School: Sanger High School, Sanger, California, T: Davin Aalto
- PHYS061T** **Identification of Type Ia Supernova Explosion Mechanisms in Dwarf Spheroidal Galaxies**  
Rachel Guo, 17, Junior, Justin Xie, 17, Junior, School: Irvington High School, Fremont, California, T: Evan N. Kirby

**COLORADO***Alamosa, USCO01, San Luis Valley Regional Science Fair, Inc.***ANIM019 Western Snowy Plover Nest Site Characteristics and Use of Drone Imagery in Predicting Potential Nesting Habitat**

Alyssa Rawinski, 16, Sophomore, School: Monte Vista High School, Monte Vista, Colorado, T: Loree Harvey

**MCRO064 That Gut Feeling: Identifying the Gut Microbiota in Different Groups of Children**

Elora Rael Smith, 17, Sophomore, School: Sargent High School, Monte Vista, Colorado, T: Rafe Paulson

*Durango, USCO02, San Juan Basin Regional Science Fair***MATS045 A Novel Approach for Sensing Seismic Events: Applications of Graphene Nanoflake Powder Composites**

Isaac Nicholas Jordan, 17, Junior, School: Animas High School, Durango, Colorado, T: Michael Jordan

*Brush, USCO03, Morgan-Washington Bi-County Science Fair***BEHA007T Me, MySelfie and I: Experimental Evidence of the Value of Self-Esteem and Selfies**

## Kaitlin Renae Wells#, 17, Junior, Aubrey Lynne Wells, 19, Senior, Kaybree Loren Keating#, 16, Sophomore, Schools: Fort Morgan High School, Fort Morgan, Weldon Valley High School, Weldon, Colorado, T: Krista Wells

**EAEV013T Black Carbon Detection: A Regional Snow Survey**

Nathaniel David Miner, 16, Sophomore, Drake Lee Ludgate, 16, Sophomore, School: Brush High School, Brush, Colorado, T: David Miner

*Colorado Springs, USCO04, Pikes Peak Regional Science Fair***BCHM027 Biodetoxification of N-nitrosamines by *Symbiotaphrina kochii* and Quantification of N-nitrosamines via Gas Chromatography Mass Chromatography**

# Katelynn Ryenne Salmon, 17, Sophomore, School: Palmer Ridge High School, Monument, Colorado, T: Kait Cumsille

**EAEV029 Characterization of the Pyroelectric and Piezoelectric Effect Exhibited by Alpha-Crystalline Silicon Dioxide: Potential Application as a Micro-Thermovoltaic Transducer**

# Jenna Marie Salvat, 17, Sophomore, School: Coronado High School, Colorado Springs, Colorado, T: Lynne Williams

**PLNT041 Microclimatological Feedbacks at Treeline**

# Michelle T. Kummel, 16, Junior, School: William J. Palmer High School, Colorado Springs, Colorado, T: Alexandra Madsen

*Greeley, USCO06, Longs Peak Science and Engineering Fair***EGCH043 Carbon Coatings on a Copper Antimonide Anode for Enhanced Performance and Lifetime in Rechargeable Metal-Ion Batteries**

Jay Chandra, 17, Junior, School: Fossil Ridge High School, Fort Collins, Colorado, T: Joe Anastasia

*La Junta, USCO07, Arkansas Valley Regional Science Fair***BEHA008 Investigating Triggers of Sundowners Syndrome in Dementia Patients in an Institutional Setting, Year Two**

Cassandra Odalys Blew, 17, Sophomore, School: La Veta High School, La Veta, Colorado, T: Patricia Keeling

*Sterling, USCO08, Northeast Colorado Regional Science Fair***PLNT042 Make Way for Duckweed: Observing the Growth Rates of *Lemna* and Its Effect on Atmospheric Carbon Dioxide Concentrations in a Simulated Carbon Sink**

# Casey John Shaw, 17, Junior, School: Liberty High School, Joes, Colorado, T: Linda Niccoli

*Boulder, USCO09, Corden Pharma Colorado Regional Science Fair***CHEM062 Discovery and Characterization of an Undocumented Ferric Sulfate Compound Formed by the Reaction of Gold Ore with Sulfuric Acid**

Kyle Oskar Fridberg, 17, Junior, School: Fairview High School, Boulder,

- Colorado, T: Paul Strode
- EGPH014** **Renewable Hydrogen and Fuel Cells: The Future of Energy**  
Claire Victor, 18, Senior, School: Centaurus High School, Lafayette, Colorado, T: Nicholas Cady
- PLNT013** **Bad Altitude: Climate Change in the Alpine May Alter Beneficial Relationships Between Plants and Their Fungal Symbionts**  
Isabella Ivy Bowland, 17, Junior, School: Fairview High School, Boulder, Colorado, T: Paul Strode
- Denver, USCO10, Denver Metropolitan Regional Science and Engineering Fair*
- CBIO034** **Statistical Analysis of Graft vs. Host Disease and Immune Reconstitution in Humanized Mice**  
Avi Swartz, 19, Senior, School: Cherry Creek High School, Greenwood Village, Colorado, T: Ethan Dusto
- CELL004** **Optimization of Zinc Oxide Nanoparticles for Vaccine Delivery**  
# Hari Sowrirajan, 17, Junior, School: Cherry Creek High School, Greenwood Village, Colorado, T: Ethan Dusto
- EAEV009** **Difference in Antibiotic Resistance on Biofilms vs. Whole Water Samples in an Aquatic Environment**  
Gabrielle Amri Barreto, 15, Freshman, School: Skyview Academy, Highlands Ranch, Colorado, T: Timothy Smith
- Fort Collins, USCO50, Colorado Science and Engineering Fair*
- BMED077** **Hospitalization in Women with Turner Syndrome**  
# Isani Singh, 18, Junior, School: Cherry Creek High School, Greenwood Village, Colorado, T: Ethan Dusto
- ENBM009** **Mechanized Collection of Organic Spider Silk**  
Aubrey Anne Berger, 18, Junior, School: Eaglecrest High School, Centennial, Colorado, T: Nicole Buyck
- MCRO012** **Applied Bacterial Biomineralization: Increasing Magnetosome Formation within *Magnetospirillum magneticum* Through Genetic Recombination of Genes Essential to Magnetosome Formation and Mutation Mediated by UV Radiation**  
Seth Holden Young, 19, Senior, School: The Classical Academy, Colorado Springs, Colorado, T: Linda Cummings
- PHYS013** **Dancing with the Stars: Simulating Multi-Star Solar Systems and the Probability of Planetary Ejection**  
# Molly Megan Nehring, 16, Sophomore, School: Monte Vista High School, Monte Vista, Colorado, T: Loree Harvey
- SOFT014** **Adding Data-Aware Sort Optimizations to the Python Interpreter**  
# Elliot Gorokhovskiy, 18, Senior, School: Fairview High School, Boulder, Colorado, T: Paul Strode
- CONNECTICUT**
- Redding, USCT02, Connecticut STEM Fair*
- CBIO002** **Detection of Premalignant Pancreatic Cancer via Computational Analysis of Serum Proteomic Profiles**  
Shobhita Saroja Sundaram, 17, Junior, School: Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante
- ENEV002** **Carbon Capture and Storage via Silver Nanoparticle Catalyzed Hydration of Carbon Dioxide**  
Agustina Stefani, 18, Senior, School: Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante
- MATS036** **Optimization of Vertically Aligned Boron Nitride Nanotube Membranes via Magnetic Arrangement in a Lyotropic Precursor for Water Transport Applications**  
Connor Li, 18, Senior, School: Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante
- Hamden, USCT50, Connecticut Science & Engineering Fair*
- ENBM029** **Formulation of a Bovine Gelatin Crosslinked Scaffold for Potential Human Tissue Applications: Cost-Effective, Patient Specific Alternative Treatment of Acetabular Labral Tears of the Hip**

- # Sophie Elizabeth Edelstein, 16, Sophomore, School: Wilbur Cross High School, New Haven, Connecticut, T: Bernard Hulin
- ENEV032** **Crowd-Sourced Detection and Mapping of Nitrate Water Pollutants via a Mobile Web-Based Image Analysis System**  
Luca Jose Barcelo, 17, Junior, School: Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante
- ENEV033** **Development of a CNT/ZnO/TiO<sub>2</sub> Membrane for Visible-Light Induced Photocatalytic Filtration of Water-Borne Organic and Bacterial Pollutants**  
Michelle Jun Xiong, 17, Junior, School: Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante
- ENEV034** **Novel Low-Temperature Carbon Capture Using Aqueous Ammonia and Organic Solvents**
- # Ethan Novek, 18, Senior, School: Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante
- MCRO029** **An Early Warning System for Zika Virus in Mosquito Populations Based on Real-Time Field Detection of Viral RNA in Mosquito Saliva**  
Rahul Subramaniam, 16, Sophomore, School: Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante
- PLNT027** **A Study of Circadian Genetics and Abiotic Stress Towards Sustainable Agriculture**
- # Maya N. Geradi, 17, Junior, School: Wilbur Cross High School, New Haven, Connecticut, T: Charlene Woodland
- ROBO016** **Computer-Aided Bleeding Detection in Wireless Capsule Endoscopy Images Using Deep Convolutional Neural Networks**  
Eunji Lee, 17, Junior, School: Sacred Heart Academy, Hamden, Connecticut, T: Elizabeth Christopy

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

- CELL013** **STITCHER 2.0: Primer Design for Overlapping PCR Applications**  
Isabel Uriagereka Herburger, 18, Senior, School: School Without Walls High School, Washington, District of Columbia, T: Adam Vrooman
- EGPH010** **"Printenna": A 3D Printed Biquad Yagi Antenna for Transmission of Space Solar Power**
- # Samuel Brian Lossef, 16, Sophomore, School: School Without Walls High School, Washington, District of Columbia, T: Adam Vrooman
- MCRO030** **Analysis of Toll-Like Receptor Expression in *Xenopus laevis* Macrophage Subsets**  
Hannah Docter-Loeb, 18, Junior, School: School Without Walls, High School Washington, District of Columbia, T: Adam Vrooman

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

- CHEM011** **Starbucks: The New BP**  
Siddharth S. Ananthan, 18, Senior, School: Sebring High School, Sebring, Florida, T: Vanessa Sinness
- MCRO002** **Performance of Lime, Chlorhexidine Gluconate Solution, Bleach Solution and Aeration of the Soil Against *Mycoplasma bovis* in Recycled Sand Bedding, a Four Year Study**
- ## Cady C. McGehee, 18, Senior, School: Okeechobee High School, Okeechobee, Florida, T: Wendy Reister

*Bradenton, USFL02, Lockheed Martin Manatee Regional Science and Engineering Fair*

- EAEV082** **The Effects of Nanosilver on Planaria**  
Isabella Marie Sanchez, 15, Freshman, School: Manatee High School, Bradenton, Florida, T: Larry Gaudio

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

- CHEM012** **An Analysis of Bisphenol-A, Bisphenol-S, Bisphenol-F in BPA-Free versus Ordinary Plastic Containers Using Gas Chromatography Mass Spectrometry**  
Anna Kucera, 17, Junior, School: Canterbury School, Fort Myers, Florida,

- T: Michael Haughey
- EAEV080** **The Effects of Boat Traffic on Water Quality as Measured by Levels of Turbidity, Colored Dissolved Organic Matter, and Chlorophyll A**
- # Melissa June Marchese, 18, Senior, School: Canterbury School, Fort Myers, Florida, T: Michael Haughey
- MATH041** **Looking into the Past for Insight on the Future: Predictive Analytics and Machine Learning for Time Series Data**
- Dahlia Dry, 17, Sophomore, School: Fort Myers High School, Fort Myers, Florida, T: Cathy Tucker
- PHYS027T** **Effects of Neodymium Magnetic Fields on *Rhizoclonium* Algae**
- Shaan Chaudhari, 18, Junior, Jash Patel, 18, Senior, Ethan Leung, 17, Junior, School: Fort Myers High School, Fort Myers, Florida, T: Cathy Tucker, David Trepkowski
- PLNT009** **The Effect of Acid Precipitation on the Vascular and Endocrine System of Plants**
- Qiao Jiao, 18, Junior, School: Canterbury School, Fort Myers, Florida, T: Michael Haughey
- Fort Pierce, USFL06, St. Lucie County Regional Science and Engineering Fair*
- EAEV041** **Degradation of Nonpathogenic Iridovirus May Improve Food Nutrition in Insects**
- # Shreya Kambam Reddy, 16, Sophomore, School: Lincoln Park Academy, Fort Pierce, Florida, T: Lina Rao
- Fort Walton Beach, USFL07, Panhandle Regional Science and Engineering Fair*
- EAEV025T** **Crumb Rubber for Artificial Turf: The Effect on Water Systems by Heavy Metal Leaching**
- # Chase T. Cleveland###, 19, Senior, Connor N. Cleveland#, 17, Junior, School: Fort Walton Beach High School, Fort Walton Beach, Florida, T: Tavia Marez
- EGPH026** **Go with the Flow: Increasing the Efficiency of the Tesla Turbine to Reduce the Cost of Cleaner Energy Generation from Natural Gas**
- # Daniel C. Bobbitt, 18, Junior, School: Niceville High School, Niceville, Florida, T: Gina Emery
- MCRO066** **Sweet Zones of Inhibition: The Antimicrobial Efficacy of Honey Against Gram Positive and Gram Negative Bacteria as Compared with Antibiotics**
- Allison Faith Bobnock, 17, Junior, School: Crestview High School, Crestview, Florida, T: Shannon Kirby
- Gainesville, USFL08, Alachua Region Science and Engineering Fair*
- BCHM032** **Treating Hypertension: Using Natural Compounds to Inhibit Angiotensin Converting Enzyme**
- Brindha Priya Rathinasabapathi, 16, Freshman, School: Eastside High School, Gainesville, Florida, T: Adrienne Thieke
- SOFT055** **Using Smart Phones to Capture and Analyze Heart Data: HeartEra App**
- ## Amir Helmy, 16, Junior, School: Eastside High School, Gainesville, Florida, T: Maureen Shankman
- Ft Lauderdale, USFL09, Broward County Science Fair*
- CELL052** **Alternative Splice Variant Expression of MCIDAS Does Not Induce Ciliated Cell Differentiation**
- Saagar Jain, 18, Junior, School: Pine Crest School, Fort Lauderdale, Florida, T: Jennifer Gordiner
- CHEM047** **Development of an Algorithm to Filter and Assign Signals in Protein NMR Spectroscopy to Accelerate Drug Discovery**
- # Suganth Kannan, 18, Senior, School: American Heritage School, Plantation, Florida, T: Leya Joykutty
- ENEV062** **Aerobic Cometabolism of cis-DCE by *Rhodococcus rhodochrous* ATCC® 21198 with Isobutane Growth Substrate**
- Lauren A. Waldman, 17, Junior, School: American Heritage School, Plantation, Florida, T: Leya Joykutty
- MCRO052** **Inhibition of Bone Metastasis in MDA-MB-231 and PC-3 Cells by the Extracellular Adherence Protein of *Staphylococcus aureus***
- Trishala Kumar, 16, Sophomore, School: American Heritage, Plantation, Florida, T: Leya Joykutty



- PHYS052**     **Stability Statistics: The Effect of Incremental Stability Deviations on Rocket Flight Optimization and Precision**  
Giancarlo Dimitri Cabeza, 17, Junior, School: Western High School, Davie, Florida, T: Magda Murphy-Bozkurt
- Jacksonville, USFL10, Northeast Florida Regional Science and Engineering Fair*
- ANIM001**     **Blue Light Effect Study: Impact on *Drosophila's* Cognitive Ability and Gender Ratios**  
James Arnheim Staman, 18, Senior, School: The Bolles School, Jacksonville, Florida, T: Kathryn Halloran
- BMED001**     **The Effects of Secondhand E-Cigarette Vapor on *Drosophila melanogaster***  
# Lindsay Sophia Poulos, 17, Junior, School: Episcopal School of Jacksonville, Jacksonville, Florida, T: Marion Zeiner
- CBIO003**     **Seizure Prediction Using Spectral Density Analysis on Pediatric EEGs**  
Maanasi Garg, 17, Junior, School: Stanton College Preparatory School, Jacksonville, Florida, T: Rajasekhar Narisetty
- MATS002**     **Fabrication of a Novel Nanoporous Hybrid and Multi-Layer Membrane for a Drug Delivery System**  
Devanik Biswas, 18, Junior, School: Stanton College Preparatory High School, Jacksonville, Florida, T: Tamla Simmons
- Lake City, USFL11, Suwannee Valley Regional Science and Engineering Fair*
- ANIM020**     **Comparison of ELISA to RIA as Predictors of Parturition in Goats**  
Emily Ann Acevedo, 16, Sophomore, School: Bradford County High School, Starke, Florida, T: Bobbie Acevedo
- Bartow, USFL12, Polk Region Science and Engineering Fair*
- MATH009**     **An Exploration in Textual Analysis**  
Grady Gerkin Daniels, 17, Junior, School: Bartow High School, Bartow, Florida, T: Debbie Kennon
- MCRO003**     **Prevention Is Better than a Cure: A Novel Approach to Inhibit *Pseudomonas aeruginosa* from Creating Biofilms**  
Prerna Ravinder, 15, Freshman, School: Bartow High School, Bartow, Florida, T: Ashley McCabe
- Melbourne, USFL13, Brevard South Science and Engineering Fair*
- ANIM012**     **Analyzing the Effects of Herbal Supplements on the Heart Rate of Crayfish While Under the Influence of Caffeine**  
Kiana Marie Padilla, 16, Sophomore, School: Palm Bay Magnet High School, Melbourne, Florida, T: Robert Cooper
- EAEV005**     **Improving Shade Balls**  
Kenneth Marshall West, 17, Sophomore, School: Melbourne High School, Melbourne, Florida, T: Robin Floyd
- Merritt Island, USFL14, Brevard Intracoastal Regional Science and Engineering Fair*
- ANIM013**     **Home Ranges of Atlantic Great White Sharks, Phase II**  
Kelly Jane van Woesik, 18, Senior, School: Satellite High School, Satellite Beach, Florida, T: Joseph Scott
- BMED002**     **Enhancing Breast Cancer Treatment Efficiency Using Circadian Rhythm**  
Julia Beth Hoffman, 17, Junior, School: Satellite High School, Satellite Beach, Florida, T: Joseph Scott
- Miami, USFL15, South Florida Science and Engineering Fair*
- BMED015**     **A Novel Method for Auto-Suturing in Robotic-Assisted Laparoscopic Coronary Artery Bypass Grafting Anastomosis**  
Ethan Zvi Levy, 15, Freshman, School: Dr. Michael M. Krop Senior High School, Miami, Florida, T: David Buncher
- CELL014**     **Role of Autophagy on HIV Tat-Induced Intracellular Calcium Release in Murine Astrocytes**  
Amanda Rocio Maytin, 18, Senior, School: Medical Academy for Science and Technology at Homestead, Homestead, Florida, T: Brian Ruhmann
- CHEM021**     **Cohesiveness of the Oscillating B-Z Reaction**  
Olivia Gottlieb, 16, Sophomore, School: Dr. Michael M. Krop Senior High School, Miami, Florida, T: David Buncher
- ENEV015T**     **RecycloTrash: Barcodes v. CV**

- Jesus Rene Capo, 16, Sophomore, David Alexander Perez, 16, Sophomore, School: Christopher Columbus High School, Miami, Florida, T: Christine Taylor
- MATH020** **Relative Entropy of Jackson Pollock's Art: Drip vs. Dark**  
Elizabeth Stone, 16, Sophomore, School: Miami Country Day School, Miami, Florida, T: David Buncher
- PLNT043** **Supercharged Plants to Fight Global Warming: Data Mining for Key Genes of Photosynthetic Acclimation to Climate Change**  
Megan May Zou, 17, Junior, School: Ransom Everglades School, Miami, Florida, T: Claudia Ochatt
- Ocala, USFL16, Big Springs Regional Science Fair*
- BCHM001** **A Novel Whole-Cell Bacterial Sensor Utilizing the Chemiluminescent Interactions Between 3-Aminophthalhydrazide and Metalloproteins**  
# Sai Aditya Sriram, 19, Senior, School: Vanguard High School, Ocala, Florida, T: Candace Roy
- CHEM010** **Copper Oxide Nanoparticles for Adsorption of Phosphate in a Novel Gel-Loaded Delivery System**  
Kunal Upadya, 18, Senior, School: Vanguard High School, Ocala, Florida, T: Candace Roy
- MCRO004** **Biowarfare: How Do Bacteriophage Viruses Lyse Bacterial Cells?**  
Angela Shar, 16, Sophomore, School: Vanguard High School, Ocala, Florida, T: Candace Roy
- Orlando, USFL17, Dr. Nelson Ying-Orange County Science Exposition*
- ENBM030** **Year Two: Use of Intestinal Scaffolding as a Pumping Assist Solution to Heart Failure**  
Rithvik Seela, 17, Junior, School: Lake Highland Preparatory School, Orlando, Florida, T: Zasha Mickey
- PHYS021** **Multi-Orbit Space Debris Cloud Tracking Using Iterative Closest Points Registration with Machine Learning**  
# Amber Zoe Yang, 18, Senior, School: Trinity Preparatory School, Winter Park, Florida, T: Michael Arney
- PHYS022** **Fabrication of a Multilayer Graphene Based Single Electron Transistor with Chemically Transferred Graphene**  
# Parker Jean Coye, 19, Senior, School: Lake Highland Preparatory School, Orlando, Florida, T: Nicole Justice
- PLNT018** **Extracting Neem and Epazote Compounds by HPLC Methods**  
Anjeli Nandwani, 19, Senior, School: Lake Highland Preparatory School, Orlando, Florida, T: Nicole Justice
- Bushnell, USFL18, Sumter County Regional Science Fair*
- ANIM005** **The Effects of Spontaneous Mutations Upon Male Fitness in *Caenorhabditis elegans***  
# Carlie Taylor, 17, Senior, School: The Villages Charter High School, The Villages, Florida, T: Monica Vinas
- BEHA017T** **Does Modern Information Technology Exacerbate Teen Procrastination?**  
## Abigail Rose Lifferth, 18, Junior, Tiffany Liu##, 17, Junior, Carter Williamson Draney, 18, Junior, School: The Villages Charter High School, The Villages, Florida, T: Monica Vinas
- EAEV017T** **Mass-Transfer Theory versus Pan Evaporation**  
Jacob Carson Wells, 18, Senior, Emily Morgan Hough, 18, Senior, Casey James Ryan, 19, Senior, School: South Sumter High School, Bushnell, Florida, T: Emily Keeler
- ENBM050** **Reach into the Future II**  
Joseph Eusebio Cilenti, 18, Senior, School: South Sumter High School, Bushnell, Florida, T: Emily Keeler
- ENEV071** **Reinventing Photobioreactors: Eliminating Industrial Emissions While Producing Energy**  
Kevin Mark Matos, 16, Sophomore, School: The Villages Charter School, The Villages, Florida, T: Monica Vinas
- Pensacola, USFL20, West Panhandle Regional Science and Engineering Fair*
- BEHA018T** **The Effect of Stress Level and Work Environment on the Accuracy of Eyewitness Testimony: Year III**  
## Patricia Kay McAuley##, 18, Senior, Holley J. Meaney##, 18, Senior, Lauren

- Alison Beall##, 19, Senior, School: Pensacola High School, Pensacola, Florida, T: Cherie Stephens
- SOFT058** **Creating an Optimised Algorithm for EEG Wave Separation and an Accompanying Graphic Interface**
- # Richard Alexander Pope, 16, Sophomore, School: Pensacola High School, Pensacola, Florida, T: Cherie Stephens
- Saint Augustine, USFL21, St. Johns County Science Fair*
- BMED078** **The Effect of Wnt/Beta-Catenin Signaling Inhibition on Oral Squamous Cell Carcinoma**
- ## Adam Benjamin Snowden, 19, Senior, School: Ponte Vedra High School, Ponte Vedra, Florida, T: Marna Fox
- Sanford, USFL23, Seminole County Regional Science, Mathematics & Engineering Fair*
- BEHA002** **Kemotions: Keys to Emotional Cues**
- ## Sapna Karina Patel, 17, Junior, School: Oviedo High School, Oviedo, Florida, T: William Furiosi
- BEHA014** **Psychophysiological Correlates of Language Processing and Handedness**
- Salim Adam Mouloua, 18, Senior, School: Paul J. Hagerty High School, Oviedo, Florida, T: Sarah Evans
- CBIO029** **Using Artificial Neural Networks to Predict Minimum Inhibitory Concentration of Candidate Antibiotics Against *E. coli* and *X. alfalfae***
- Jonathan Paul Sepulveda, 18, Junior, School: Paul J. Hagerty High School, Oviedo, Florida, T: Sarah Evans
- Stuart, USFL25, Martin County Regional Science and Engineering Fair*
- ENEV004** **Zapping the Pollutants! Electro-Oxidation for Pollution Control**
- Rohan Sanjeev Jakhete, 14, Freshman, School: South Fork High School, Stuart, Florida, T: Mark Turull
- Tampa, USFL27, Hillsborough Regional Science Fair*
- BCHM011** **The Effect of Monosodium Glutamate on the Degranulation of Lymphocytes in Serum and Red Blood Cells**
- Brynna Grier McFarland, 17, Junior, School: Durant High School, Plant City, Florida, T: Megan Faliero
- CHEM005** **Tuning Carbon Dioxide Capture Behavior via Ion Exchange in Porous Organic Polymers**
- Clarice Su, 19, Senior, School: C. Leon King High School, Tampa, Florida, T: Nicole Richards-Works
- Merritt Island, USFL28, Brevard Mainland Regional Science and Engineering Fair*
- ANIM008** **Shining Light on the Blind: Evolutionary Regression and Adaptive Progression in the Micro-Vertebrate *Ramphotyphlops braminus*, Year Three**
- ## River Grace, 18, Senior, School: West Shore Junior/Senior High School, Melbourne, Florida, T: Mary Anderson
- EAEV030** **Increasing the Sustainability of a Heterotrophic Algae Biomass Production System: A Six Year Study of *Chlorella vulgaris***
- ## Alexandra Katrina Gabrielski, 19, Senior, School: Viera High School, Viera, Florida, T: Elizabeth Youngs
- ENEV005** **Do Herbicides and Fertilizers Found in Surface Runoff Affect the Oyster (*Crassostrea virginica*) and Clam (*Mercenaria mercenaria*) Ability to Naturally Filter and Improve the Overall Water Quality of the Indian River Lagoon?**
- Kyle Wilson Bramblett, 15, Freshman, School: Titusville High School, Titusville, Florida, T: Allan Sprayberry
- West Palm Beach, USFL29, Palm Beach Regional Science and Engineering Fair*
- ANIM028** **Synthesis of a Soy Protein Hydrogel for Invasive Snail Control in Agricultural Settings**
- # Jessica E. Young, 19, Senior, School: Palm Beach Central High School, Wellington, Florida, T: William Bartenslager
- ANIM029** **Elasmobranch Olfactory Organ Morphology**
- Ayse Demircan, 18, Senior, School: Florida Atlantic University High School, Boca Raton, Florida, T: Robin Barks
- BMED044** **Antibiotic Properties of *Moringa oleifera* to Combat Superbugs**

- Srijith Nair, 18, Senior, School: American Heritage School of Boca Delray, Delray Beach, Florida, T: Iris Thompson
- BMED045 Smells Like a Solution Autophagy in Chemosensory Neurons Is Essential for Lipid Metabolism Regulated by Insulin-Like Signaling in *Caenorhabditis elegans***  
Ray Jia, 17, Junior, School: Alexander W. Dreyfoos School of the Arts, West Palm Beach, Florida, T: Stephen Anand
- EAEV042 Stormwater Treatment Area Performance Prediction Using Artificial Neural Networks**  
William Gao, 17, Junior, School: Suncoast Community High School, Riviera Beach, Florida, T: Jeffrey Laufer
- ENEV037 Functionalizing Biochar with Layered Double Hydroxides for Removal of Phosphate and Nitrate from Aqueous Solutions**  
# Stefan Wan, 18, Senior, School: Alexander W. Dreyfoos School of the Arts, West Palm Beach, Florida, T: Michael Rathe
- ENMC037 Protecting Civilians and Public Service Personnel Through an Early Identification and Warning System for Airborne Chemicals: SEIAC**  
# Hannah Dorothy Herbst, 17, Sophomore, School: Florida Atlantic University High School, Boca Raton, Florida, T: Robin Barkses
- New Port Richey, USFL30, Pasco Regional Science and Engineering Fair*  
**CBIO013 Developing Novel Gene Candidates (MEF2A, LTA, LGALS2, ALOX5AP, and PDE4D), Through an Adaptive Genetic Algorithm, Support Vector Cluster, and Dynamic Bayesian Networks, to Analyze in a Learning Classifier System for a Highly Propitious CRISPR Therapy for Ischemic Heart Disease**  
Anmol Warman, 17, Junior, School: Academy at the Lakes, Land O' Lakes, Florida, T: Colleen McCormick
- CHEM017 Investigating New Methods of Noninvasive Glucose Monitoring**  
Sreten Dedic, 17, Junior, School: James W. Mitchell High School, New Port Richey, Florida, T: Edwin Braddy
- Vero Beach, USFL31, Indian River Regional Science and Engineering Fair*  
**ANIM030 Using Response Surface Methods to Optimize a Repellant for the Invasive Sri Lankan Weevil, *Myloccerus undecimpustulatus undatus* Marshall (Coleoptera: Curculionidae: Entiminae)**  
# Sana Shareef, 17, Junior, School: Saint Edward's School, Vero Beach, Florida, T: Kerryane Monahan
- EAEV062T Indium Prospecting Using Neural Nets**  
# Spencer James Toll#, 19, Senior, Joshua L. Tucker, 18, Senior, School: Vero Beach High School, Vero Beach, Florida, T: Heather Holden
- Sarasota, USFL32, Sarasota County STEM Summit*  
**ENBM077 Alzheimer's Treatment: Solubilized Curcumin via Trans-Buccal Patch**  
Kathryn Elizabeth Savage, 16, Sophomore, School: Sarasota High School, Sarasota, Florida, T: Andrew Harshman
- MATS074 Modifying Substrate Mechanics to Bioengineer an *in vitro* Tumor Microenvironment**  
Codi Joy Elliott, 18, Senior, School: Sarasota High School, Sarasota, Florida, T: Andrew Harshman
- Clermont, USFL34, Lake Regional Science & Engineering Fair*  
**MATH053 A Novel Solution for Integer Factorization with Cryptographic Applications**  
Evan Jason Kirby, 19, Senior, School: East Ridge High School, Clermont, Florida, T: Alec Lockhart
- Lakeland, USFL50, State Science and Engineering Fair of Florida - Ying Scholars*  
**ANIM049 Sustainable Mosquito Control: A Chemical-Free, Low-Cost Approach to Controlling *Aedes aegypti*, a Vector of Zika Virus**  
#### Shantanu Jakhete, 17, Senior, School: South Fork High School, Stuart, Florida, T: Marc Turull
- BMED012 Vitamin E Delta-Tocotrienol Targets Cancer Stem Cell Transcription Factors and Inhibits Human Pancreatic Cancer Metastasis**  
Sayyada Kazim, 18, Senior, School: Tampa Bay Technical High School, Tampa, Florida, T: Bryan Kelly

- CELL030** **Moving Towards the Cure: Investigating the Effect of cAMP-Dependent Molecular Mechanisms on the Regulation of MAPT Gene Expression and the Formation of Neurofibrillary Tangles to Identify Drug Targets for Alzheimer's Disease**  
### Jay Chandar, 18, Senior, School: Canterbury School, Fort Myers, Florida, T: Michael Haughey
- CHEM063** **Improving Nitration Activity of Fused TxtE-CYP102AI Reductase Domain by Optimizing the Linker Length**  
Padmavathi Reddy, 17, Senior, School: American Heritage School, Plantation, Florida, T: Leya Joykuttu
- EGPH001** **Thermoelectric Generator Powered Tracking Concentrated Photovoltaic System**  
# Camille Alden Miles, 18, Junior, School: Niceville High School, Niceville, Florida, T: Gina Emery
- ENMC038** **Mission to Mars: Designing a Spacecraft Impact Protection and Detection System with Radiation Shielding**  
Grayson Hunstinger, 18, Junior, School: Lakeland Grace Academy/New Life Christian, Lakeland, Florida, T: Blake Monroe
- MATS033** **Novel Agarose Processing Techniques: Development and Impregnation of Hyper-Porous Agarose Emission Foam and Micro-Cylindrical Agarose Particles**  
Hamzah Faiyaaz Jhaveri, 18, Junior, School: Lake Highland Preparatory School, Orlando, Florida, T: Nicole Justice
- PLNT044** **Molecular Characterization and Enhanced Efficacy in the Development of a Novel Host-Specific Bioherbicide Candidate for *Cyperus rotundus***  
## Hanifa Shareef, 17, Junior, School: Lincoln Park Academy, Fort Pierce, Florida, T: Lisa Hevner
- GEORGIA**  
*Albany, USGA01, Darton College/Merck Regional Science Fair*
- PHYS001** **Determining Impulse of 3-D Printed Rocket Nozzles**  
Weston Oliver Rogers, 18, Senior, School: Colquitt County High School, Norman Park, Georgia, T: Vance Hurst
- Atlanta, USGA03, Atlanta City Science & Engineering Fair*
- BCHM002** **Optimizing and Evaluating Signal Peptide Peptidase Crystallization Conditions Using Electron Crystallography**  
Ty Price, 17, Junior, School: Benjamin E. Mays High School, Atlanta, Georgia, T: Angela Bush-Ecford
- CBIO050** **Engineering an Anti-Inflammatory Drug Delivery System for Islet Transplantation**  
Jahizreal R. Aquart, 18, Senior, School: BEST Academy High School at Benjamin S. Carson, Atlanta, Georgia, T: Kenyatta Stacker
- CELL056** **Using Commercial Oxygen MicroSensors to Measure Oxygen Consumption in Cell Cultures**  
Clinton Smith, 17, Junior, School: The BEST Academy at Benjamin S. Carson, Atlanta, Georgia, T: Kenyatta Stacker
- Stone Mountain, USGA04, DeKalb Science & Engineering Fair*
- BEHA053** **Social Media and Social Anxiety: How Does Social Media Presence Correlate with the Exhibition of Anxiety Characteristics?**  
Josie Dylan Douglas-Brown, 16, Sophomore, School: Lakeside High School, Atlanta, Georgia, T: Thomas Collop
- TMED034** **An Early Tri-Biomarker Sputum Diagnostic for Cystic Fibrosis in the Developing World**  
Zoe Weiss, 16, Sophomore, School: Lakeside High School, Atlanta, Georgia, T: Tania Murphy
- McDonough, USGA06, Henry County Science and Engineering Fair*
- CELL001** **Galectin-4 and the Functions of N- and C- Terminal Domains in Innate Immunity**  
Marissa Rose McDonald, 18, Junior, School: Union Grove High School,

- McDonough, Georgia, T: Melissa Davis  
**ENMC001 Integrated Self-Powered Bicycle Wheel Light**  
 Thomas J. Dorminy, 19, Senior, School: Sola Fide Home School, McDonough, Georgia, T: Ann Dorminy
- MATH004 The Effect of Language on the Time Required to Convey a Message**  
 Kyle Thomas Carden, 16, Sophomore, School: Union Grove High School, McDonough, Georgia, T: Keron Gwaltney
- Milledgeville, USGA07, Georgia College & State University Regional Science and Engineering Fair*
- TMED003 Inhibiting the Proliferation of Patient-Derived Glioblastoma Multiforme (GBM) Cells and U-87 MG Cell Line Using Leaf Extract of *Bacopa monnieri***  
 Tejas S. Athni, 17, Junior, School: Stratford Academy, Macon, Georgia, T: Prahlad Parajuli
- Savannah, USGA08, Savannah Regional Science and Engineering Fair*
- BMED080 What Sun Protection Products Block Ultraviolet Radiation Best?**  
 Carlisle Reese McCullough, 16, Sophomore, School: Savannah Arts Academy, Savannah, Georgia, T: Kristin Sheffield
- Griffin, USGA09, Griffin RESA Regional Science Fair*
- EGPH002 Power Moves: Harvesting Kinetic Energy to Generate Electricity**  
 Megan Grace Uszynski, 16, Freshman, School: McIntosh High School, Peachtree City, Georgia, T: Stephaine Sisk
- ENMC026 Can Machines Learn to Design Better than Humans?**  
 Robert Connor van Zyl, 17, Sophomore, School: McIntosh High School, Peachtree City, Georgia, T: Christina Bryant
- Warner Robins, USGA10, Houston Regional Science and Engineering Fair*
- ANIM007 Optimizing Goat Skin Fibroblast Culture Conditions for Cloning**  
 Aakash Arora, 16, Sophomore, School: Veterans High School, Kathleen, Georgia, T: Jennifer Douglass
- ENBM010 Modeling and Engineering an Electricity Free Nebulizer**  
 Nicole Veloro Tayag, 17, Junior, School: Veterans High School, Kathleen, Georgia, T: Jennifer Douglass
- Duluth, USGA11, Gwinnett Regional Fair*
- BMED016T Inhibiting the Growth of CAL-1 Cells with Retinol and Retinoic Acid to Prevent Blastic Natural Killer Cell Lymphoma**  
 Kiara Luyando Harding, 18, Senior, Qingzeng Gao, 17, Junior, School: Parkview High School, Lilburn, Georgia, T: Rylan Wade
- CBIO008 A Non-Invasive Diagnosis Method for Eye Cancers Using Machine Learning Algorithms**  
 Suraj Modi, 16, Sophomore, School: Mountain View High School, Lawrenceville, Georgia, T: Billy Jones
- MCRO031 Investigating the Effects of UV Radiation on Yeast Colony Growth**  
 Nicholas Michael Couchara, 17, Sophomore, School: Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Susan Kramer
- Conyers, USGA12, Rockdale Regional Science & Engineering Fair*
- CBIO006 Data Analysis of the Epigenetics of Drug and Alcohol Dependence**  
 Nkima J. Stephenson, 18, Senior, School: Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Tyrone Huebsch
- EAEV001 The Effect of EDTA Chelation as a Desorption Mechanism**  
 Madeline Shaw Burkey, 18, Junior, School: Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: John Hendrix
- MCRO008 Topical Antibiotics Consisting of Iron Oxide Nanoparticles**  
 Michelle Nguyen, 17, Junior, School: Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: JoDi Osborn
- Atlanta, USGA13, Fulton County Regional Science & Engineering Fair*
- CELL003 Effect of Thymol on Telomerase Systems: A Potential "Catch-All" Cure for Cancer Therapy**  
 Eric Yiyang Wang, 18, Senior, School: Chattahoochee High School, Johns

- Creek, Georgia, T: Matt Mihordea
- ENBM011 3D Printed Myoelectric Prosthesis without TMR Surgery**  
Max Seidel, 16, Sophomore, School: Riverwood International Charter School, Atlanta, Georgia, T: Lakshmi Anumukonda
- MATS078T Fibrin Scaffold for Dentin-Pulp Regeneration with DPSCs**  
Rose Mei Hong, 17, Junior, School: Del Norte High School, San Diego, California, T: Jasmin Gao, 19, Senior, School: Northview High School, Johns Creek, Georgia, T: Rebecca Bingham
- Athens, USGA50, Georgia State Science and Engineering Fair*
- BCHM023 Characterizing Effect of Glutamine Position on A-Beta Fiber Structure, Year Two**  
# Andrea Augustine, 18, Senior, School: Eagle's Landing High School, McDonough, Georgia, T: Jennie Borders
- MATS057 Multidrug Resistant Superbugs: Selective Separation, Identification and Killing Using Fluorescent, Magnetic Multifunctional Carbon Dots**  
Vikram Rупpa-Kasani, 17, Junior, School: Chattahoochee High School, Johns Creek, Georgia, T: Matt Mihordea
- PHYS043 Deviation Patterns of the Orbital Trajectories of the Galilean Satellites**  
Benjamin Breer, 17, Junior, School: The Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Susan Kramer
- PHYS049 The Search for Newborn Stars: Observing Bok Globules in the Visible and Infrared**  
Anderson Thrasher, 17, Junior, School: Henry W. Grady High School, Atlanta, Georgia, T: Luke Esposito
- HAWAII**
- Honolulu, USHI01, Hawaii Association of Independent Schools Science and Engineering Fair*
- PHYS023 Entanglement Distillation: Building a QED Circuit to Alleviate Decoherence**  
Elijah Keene Kaimiola Mossman, 17, Junior, School: Kamehameha Schools Kapalama High School, Honolulu, Hawaii, T: Gail Ishimoto
- Waipahu, USHI02, Leeward District Science and Engineering Fair*
- CELL007 Exosomes as Vaccine Candidates for Flavivirus Including Zika Virus**  
Floyd Jensen Rubonal, 18, Senior, School: Waipahu High School, Waipahu, Hawaii, T: Michael Sana
- ENBM018 Chitosan Gelatin Microspheres: Using Fluorescein as an Indicator for the Delivery of Drugs into CEM, HeLa, and HEK 293 Cells**  
# Deserie Miguel Pagatpatan, 18, Senior, School: Waipahu High School, Waipahu, Hawaii, T: Michael Sana
- ENMC021T Cost-Effective Remotely Operated Vehicles (ROVs) for Ecological Analysis**  
## Alex Yamada#, 18, Senior, Eric Scott Schlitzkus#, 17, Junior, School: Pearl City High School, Pearl City, Hawaii, T: Anthony Ferro
- Wailuku, USHI03, Maui Schools Science and Engineering Fair*
- ENEV076 Developing a pH Sensor Using a Raspberry Pi to Monitor Ocean Acidification, Year Two**  
# Evelyn Amal Haase, 16, Sophomore, School: Molokai High School, Hoolehua, Hawaii, T: Emilio Macalalad
- SOFT057 Creating a Database-Powered Web Service to Preserve Biodiversity in Hawaii**  
# Luke Timothy Jones, 18, Senior, School: Kihei Charter Public High School, Kihei, Hawaii, T: Amanda Wilson
- Lihue, USHI04, Kauai Regional Science & Engineering Fair*
- EAEV091T Human Impacts on Coral Reefs**  
Shasta B. White, 17, Junior, Sonata Yazmee Beasley, 17, Senior, School: Kapaa High School, Kapaa, Hawaii, T: Nicole Mckamey
- Hilo, USHI05, Hawaii District Science and Engineering Fair*
- ANIM061 Using Fluorescence as a Death Assay for *Angiostrongylus cantonensis* Nematode**  
# Ina Henna Klasner, 16, Sophomore, School: Hilo High School, Hilo, Hawaii,

- T: Pascale Pinner  
**EAEV018 Arsenic Contamination Through Tsunami Wave Movement in Hawaii: Investigating the Concentration of Heavy Metals in the Soil from the 1960 Hilo, Hawaii Tsunami**  
 Jared J.K. Goodwin, 16, Sophomore, School: Hilo High School, Hilo, Hawaii,  
 T: Pascale Pinner  
*Kaneohe, USHI06, Windward District Science and Engineering Fair*
- BEHA043 Suggested Memory Therapy: A Novel Treatment for Psychological Inflexibility**  
 # Ben Weiss, 17, Sophomore, School: Kalaheo High School, Kailua, Hawaii,  
 T: Crystal Stafford
- MCRO005 Mutagenesis of Soil Bacteria for Life on Mars**  
 ## Samuel Marin Scott, 17, Junior, School: Kahuku High and Intermediate School, Kahuku, Hawaii, T: Daniel Scott  
*Honolulu, USHI07, Central Oahu District Science and Engineering Fair*
- MCRO006 The Effect of Bacterial Metabolism and Bacterial Interaction on the Electrical Output of Microbial Fuel Cells**  
 # Shakson Kyoh Isaac, 16, Sophomore, School: Mililani High School, Mililani, Hawaii, T: Sandra Webb
- PLNT045T Optimization of Algal Biomass Production Under Salt Water Conditions**  
 Min Hua Tsou, 16, Sophomore, Lindsay Hikari Chow Shiroma, 16, Sophomore, School: Mililani High School, Mililani, Hawaii, T: Christopher Johnson  
*Honolulu, USHI08, Honolulu District Science & Engineering Fair*
- BMED009 The Effects of Amino Acids on Preimplantation Mouse Embryo Development**  
 Emily Yang, 18, Senior, School: Kalani High School, Honolulu, Hawaii,  
 T: Kenneth Okawa
- ENEV006 Phytodesalination of Saline Soil Using Native Hawaiian Halophytes**  
 Mika Alexandra Ishii, 16, Freshman, School: Kalani High School, Honolulu, Hawaii, T: Kenneth Okawa  
*Honolulu, USHI50, Hawaii State Science and Engineering Fair*
- BMED083 Determining the Effect of Parkinson's Disease LRRK2 Mutations on Synaptic Vesicle Recovery**  
 ## Roshani Jha, 18, Senior, School: President Theodore Roosevelt High School, Honolulu, Hawaii, T: Sarene Oda
- CELL053 A Morphokinetic and Machine Learning Model for Aneuploidy Screening of Human Preimplantation Embryos**  
 Davey Hideo Huang, 18, Junior, School: Iolani School, Honolulu, Hawaii,  
 T: Yvonne Chan
- PHYS053 Determining the Ages and Distances of Open Clusters**  
 Erica Alesa Sawczynec, 18, Senior, School: Kihei Public Charter High School, Kihei, Hawaii, T: Amanda Wilson
- ROBO048 Using Inverse Kinematics and Virtual Reality to Control a Robotic Arm**  
 Samuel M. Cadotte, 16, Sophomore, School: Iolani School, Honolulu, Hawaii,  
 T: Frederick Heyler
- SOFT054 The Ultimate Platform for Plankton Education**  
 Matthew Jung Woo Fala, 19, Senior, School: Iolani School, Honolulu, Hawaii,  
 T: Mark Lindsay
- IDAHO**  
*Moscow, USID01, Northern Idaho Science & Engineering Fair*
- BEHA036 Gas Prices and Buying Trends**  
 Amrit Singh, 17, Junior, School: Grangeville High School, Grangeville, Idaho,  
 T: Shaun Bass  
*Boise, USID02, Western Idaho Science & Engineering Fair*
- ENMC012T High Efficiency Rocket Nozzles**  
 Brooklyn Jean Legg, 17, Junior, Taylor Herndon, 17, Junior, Luke Campbell, 17, Junior, School: Vision Charter School, Caldwell, Idaho,



- T: Jason George
- ROBO006** **Android Application Development for Algorithmic Music Generation through Artificial Neural Networking**  
Sriram Gopalakrishnan, 18, Senior, School: Centennial High School, Boise, Idaho, T: Mike McClendon
- Pocatello, USID03, Eastern Idaho Science & Engineering Fair*
- PHYS039T** **Detecting Exoplanet Transits via CCD Photometry**  
Kayson Taka Hansen, 16, Sophomore, Kylie Yui Hansen, 18, Junior, School: Twin Falls High School, Twin Falls, Idaho, T: Candace Wright
- ILLINOIS**
- Chicago, USIL01, Chicago Public Schools Student Science Fair*
- CELL019** **Predicting Paths to Prostate Cancer: The Role of Inorganic Arsenic in Estrogen Receptor Mediated Signaling Pathways**  
Anusha Ebrahim, 19, Senior, School: Whitney M. Young Magnet High School, Chicago, Illinois, T: Shyama Majumdar
- ENMC055** **Angling Energy for Vitamin D3 Synthesis Efficiency**  
Abigail Ann Arnashus, 15, Freshman, School: Von Steuben Metropolitan Science Center, Chicago, Illinois, T: Jennifer Roden
- MATS026** **Aqueous vs. Interfacial Routes of Polyaniline**  
Hazel Rose Galvan, 17, Sophomore, School: Von Steuben Metropolitan Science Center, Chicago, Illinois, T: Jennifer Roden
- TMED020** **The Development of Specific Colon Cancer microRNA Profiles for Early and Accurate Diagnosis**  
# Emily Claire Neeson, 18, Senior, School: Chicago High School for Agricultural Sciences, Chicago, Illinois, T: Adam Kriska
- Edwardsville, USIL02, STEM Science and Engineering Research Challenge*
- MATS034T** **Graphene Doping**  
Dylan Trevor Hall, 19, Senior, Devin Daniel Harris, 19, Senior, School: Collinsville High School, Collinsville, Illinois, T: Cynthia Bednara
- Peoria, USIL03, Heart of Illinois Science and Engineering Fair*
- EAEV031T** **To Drink or Not to Drink: The Lysis of *Escherichia coli* by Ultraviolet Light Through a Makeshift Filtration System, Part Two**  
# Abigail Lynn Rademaker#, 19, Senior, Taylor Michelle Lawrence#, 18, Senior, School: Delavan High School, Delavan, Illinois, T: Mary Kay Wonders
- Springfield, USIL04, Illinois Junior Academy of Science Region X Science Fair*
- BCHM016** **Opening of Hollow Gold Nanoparticle-Liposome Composites Using Normal Human Body Temperature**  
David Bruns, 17, Senior, School: Fisher's of Men Academy, Rosamond, Illinois, T: Anne Rammelsberg
- EGCH035** **Wavelength Dependence of Light-Activated Transformation of Carbon Dioxide at Copper Oxide Electrodes**  
## John Cramsey, 19, Senior, School: Southeastern Junior/Senior High School, Augusta, Illinois, T: Stephen Foster
- Skokie, USIL05, Illinois Junior Academy of Science North Suburban Region 6 Science and Engineering Fair*
- BMED024** **The Effect of Mutations in the Ligand Binding Pocket on the Function of Ftz F1**  
Sumona Udayan Banerjee, 19, Senior, School: Niles North High School, Skokie, Illinois, T: Christine Camel
- CHEM018** **Conductivity of Doped Polypyrrole Films Synthesized by Electropolymerization**  
Vijay M. Shah, 19, Senior, School: Niles West High School, Skokie, Illinois, T: Rachael Swiercz
- MATH021** **Determining Optimal Pitch Selection Using Run Values and PITCHF/x Data**  
Cameron Benesch, 19, Senior, School: Niles North High School, Skokie, Illinois, T: Susie Posnock
- PLNT014** **Creating a Model System for Micronutrient Fortification**  
# Sedra Khutija Khan, 18, Senior, School: Niles West High School, Skokie, Illinois, T: JulieAnn Villa
- SOFT015** **Adaptive School Bus Routing Using a Genetic Algorithm**

Jiedong Duan, 19, Senior, School: Niles North High School, Skokie, Illinois,  
T: Susie Posnock

## INDIANA

Evansville, *USIN20, Hoosier Science and Engineering Fair Region 1*

### ENEV061 **Graphene Oxide: A Novel Material for Water Filtration**

Ankush Dhawan, 16, Freshman, School: Signature School, Evansville, Indiana,  
T: Sandeep Dhawan

Indianapolis, *USIN21, Hoosier Science and Engineering Fair Region 2*

### PHYS057 **Radiation from Telecom Devices: Impact on Life and Combating Threats**

Akshaj Mishra, 15, Freshman, School: Signature High School, Evansville,  
Indiana, T: Lata Shukla

Indianapolis, *USIN22, Hoosier Science and Engineering Fair Region 3*

### EGPH039 **Recycling Energy and Reducing Solid Waste: A Novel Battery-Charging Device with Optical Concentrator Reflector Design that Optimizes Indoor Energy Harvesting**

Annie Ostojic, 15, Freshman, School: Munster High School, Munster, Indiana, T:  
Diane Ostojic

Indianapolis, *USIN23, Hoosier Science and Engineering Fair Region 4*

### EAEV084 **The Effects of Low Levels of Radiation on *Physarum polycephalum***

Levi Stephen Hrabos, 17, Sophomore, School: Northwestern High School,  
Kokomo, Indiana, T: Linda Wilson

Indianapolis, *USIN24, Hoosier Science and Engineering Fair Region 5*

### MCRO062 **Engineering of Fusion Protein Constructs to Efficiently Combat Neurological Damage Caused by *E. coli* K1 Meningitis**

# Sepehr Asgari, 17, Sophomore, School: Carmel High School, Carmel, Indiana, T:  
Jacob Fitzgerald

Greencastle, *USIN25, Hoosier Science and Engineering Fair Region 6*

### PLNT053 **The Effects of Mycorrhizal Fungi on *Ustilago maydis***

Amanda Grace Wilson, 17, Sophomore, School: Northwestern High School,  
Kokomo, Indiana, T: Linda Wilson

West Lafayette, *USIN26, Hoosier Science and Engineering Fair Region 7*

### PLNT057T **Optimization of Cellobiase Function in Breakdown of Cellulosic Material Using Co-Enzymes: A Model for Biofuel Enhancement**

# Pranav Ramkumar Sriram, 17, Junior, Jay Maturi#, 18, Junior, Schools: Carmel High School, University High School of Indiana, Carmel, Indiana  
T: Erica Adams

Valparaiso, *USIN27, Hoosier Science and Engineering Fair Region 8*

### CELL041 **Alpha-Synuclein Oligomers and Mitochondrial Membrane Permeabilization: A Potential Cytotoxic Mechanism in Parkinson's Disease**

Bowen Jing, 18, Junior, School: West Lafayette Junior-Senior High School,  
West Lafayette, Indiana, T: Jane Schott

### EAEV055 **Monitoring Drought Conditions in the Sequoia National Forest in California by Using Satellite Imagery**

Anthony David Weng, 17, Junior, School: Terre Haute South Vigo High School,  
Terre Haute, Indiana, T: Melanie Huber

Indianapolis, *USIN50, Hoosier Science and Engineering Fair*

### BMED074 **Oncolytic Activity of Engineered Adenovirus Ad-TERT in Glioblastoma Multiforme**

# Jooyoung Lee, 18, Senior, School: West Lafayette Junior-Senior High School,  
West Lafayette, Indiana, T: Jane Schott

### BMED076 **The Effect of Pollutant Bisphenol A on Cancer Cell Proliferation**

# Zhiyue Wang, 18, Senior, School: West Lafayette Junior-Senior High School,  
West Lafayette, Indiana, T: Jane Schott

### EBED040 **3D POV Display**

Evan Eugene Shrader, 18, Junior, School: Terre Haute North Vigo High School,  
Terre Haute, Indiana, T: Glen Cook

### MATH042 **Mapping Edges to Nodes by Utilizing Morton Codes in Stochastic Kronecker Graphs**

### Arjun Srinivasan Ramani, 19, Senior, School: West Lafayette Junior-Senior High School, West Lafayette, Indiana, T: Jane Schott

**IOWA***Cedar Rapids, USIA01, Eastern Iowa Science and Engineering Fair***EENEV028 Engineered Environmental Containment: Using *Lemma minor L.* to Reduce Nitrate Levels in Aquatic Environments**

Aaron Alexander Wills, 18, Junior, School: Central Lee High School, Donnellson, Iowa, T: Alicia Schiller-Haynes

**PLNT022 Inhibition of *Sclerotinia sclerotiorum* via Cover Crop, *Coniothyrium minitans*, and Foliar Application**

Mason Carl Burlage, 18, Junior, School: Beckman Catholic High School, Dyersville, Iowa, T: Cheryl Kluesner

*Sheldon, USIA02, Western Iowa Science and Engineering Fair***EGCH013 Heating Our Way to the Future!**

# Bryn Taylor Groff, 19, Senior, School: Sheldon High School, Sheldon, Iowa, T: Kristopher Groff

*Ames, USIA50, State Science and Technology Fair of Iowa***BCHM030 Increasing the Efficiency of a Nasal Epinephrine Delivery System**

# Alexandra Anne Zelenski, 17, Senior, School: Burlington Community High School, Burlington, Iowa, T: Elizabeth Sanning

**BEHA044 The Turban Myth**

J.J. Singh Kapur, 18, Junior, School: Valley High School, West Des Moines, Iowa, T: Joshua Woods

**ENBM047 A Novel 3-D Engineered Solution for Congenital Microtia of the Ear**

Vidya Mullangi, 17, Junior, School: Burlington Community High School, Burlington, Iowa, T: Elizabeth Sanning

**MCRO053 Next-Gen Sequencing Analysis of Dental Biofilm Microbiome Upon Gifts Nano Charcoal Cleaning**

# Pranav Chhaliyil, 16, Sophomore, School: Maharishi School, Fairfield, Iowa, T: Pradheep Chhalliyil

**PHYS046 Investigating the Properties of Dark Matter**

# Gabriel Mintzer, 18, Senior, School: Central Campus, Des Moines, Iowa, T: Kacia Cain

**KANSAS***El Dorado, USKS50, Kansas State Science and Engineering Fair***CBIO030 Identification of Natural Selection in *Mayetiola destructor* SNP Markers from Sequencing Data**

Luann C. Jung, 16, Junior, School: Manhattan High School, Manhattan, Kansas, T: Janet Stark

**MCRO059 Purple Power**

Rachel Jones, 19, Senior, School: Liberal High School, Liberal, Kansas, T: Melissa Westerman

**KENTUCKY***Louisville, USKY02, Louisville Regional Science and Engineering Fair***BCHM019 Bioengineering Islet Cells Using 3D-Bio Printing Technology for the Treatment of Type-1 Diabetes**

Vishaal N. Balamurugan, 17, Junior, School: North Oldham High School, Goshen, Kentucky, T: Pete Williams

**EGCH009 Optimization of Storage Capacity Using Activated Carbon Fibers from Sustainable Agricultural Sources for Hydrogen**

Sriram Satyavolu, 17, Junior, School: Kentucky Country Day School, Louisville, Kentucky, T: Mike Moreland

**ENMC027 Development of a Hybrid Direct Ink Write 3D Printer: A Novel Approach to 3D Printing Multi-Material Functional Devices and Flexible Electronics**

## Joshua Murphy Jacob, 18, Junior, School: Saint Xavier High School, Louisville, Kentucky, T: Greg Cambron

**TMED013 Can Tender Coconut Water Inhibit the Growth of HepG2 Liver Cancer Cells?**

Vaitheesh L. Jaganathan, 15, Freshman, School: Ballard High School, Louisville, Kentucky, T: Kelly Risinger

*Louisville, USKY03, Dupont Manual High School Regional Fair*

- CELL020** **Tactile Stimulation of the Tongue Elicits the Activation of TrkC Neurons in the Trigeminal Ganglion**  
Madison Andrea Sneve, 18, Junior, School: duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig
- CHEM055** **Optimization of Temperature Conditions for Pristine Graphene Synthesis**  
Govind Krishna, 17, Junior, School: duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig
- ENBM020T** **Development of 3D-Printed Electronic Stethoscope and Open-Source Android-Based Platform with Automated Diagnosis of Cardiac Conditions**  
## Abraham Riedel-Mishaan, 17, Senior, Praharsahasai Paladugu##, 18, Senior, Ryan Edward Folz, 18, Senior, School: duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig
- MATS012** **Collisions of a Buckyball with Graphene and SiC Sheets at Supersonic Speeds**  
## Emily Jiayuan Liu, 18, Senior, School: duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig
- Highland Heights, USKY04, Science and Engineering Fair of Northern Kentucky*
- BMED079** **Impact the Force: Effects of Insoles on Impact Force for Gymnasts**  
# William Broomhead, 16, Sophomore, School: Kenton County Academy of Innovation and Technology, Fort Mitchell, Kentucky, T: Sara Anderson  
*Lexington, USKY05, Central Kentucky Regional Science and Engineering Fair*
- CELL031** **Characterization of Platelet Endocytosis and Its Role in Immunity**  
Thirushan Wignakumar, 17, Senior, School: Paul Laurence Dunbar High School, Lexington, Kentucky, T: Karen Young
- ENMC030** **The Next Airbender: A Novel Approach to Airfoil Efficiency and the Optimization of the Lift-to-Drag Ratio**  
Rachel Seevers, 16, Sophomore, School: Paul Laurence Dunbar High School, Lexington, Kentucky, T: Karen Young
- TMED051T** **Rapamycin as a Novel Therapeutic for Alzheimer's Disease: An Imaging Assessment of Prevention and Treatment Through *in vivo* Brain Vasculature, Metabolism, and Cognition**  
## David Wang Ma#, 17, Junior, Amy C. Wang#, 18, Senior, School: Paul Laurence Dunbar High School, Lexington, Kentucky, T: Ai-Ling Lin  
*Richmond, USKY50, Kentucky Science and Engineering Fair*
- CBIO031** **Computer Simulation of Genetically Modified *Aedes aegypti* Release Methods**  
Gregory David Schwartz, 17, Junior, School: duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig
- CHEM061** **"Surface-Migrating" Additives to Improve Stain Resistance of Coatings**  
Kairav Bhat Kukkala, 17, Junior, School: Ballard High School, Louisville, Kentucky, T: Ronda Fields
- EAEV073** **Soil Quality in Developed and Agricultural Areas: How Does Neighborhood Development Degrade Homeowners' Soil?**  
Jin Cho, 17, Junior, School: Paul Laurence Dunbar High School, Lexington, Kentucky, T: Elizabeth Pelphey
- EBED033** **Monitoring of Arsenic in Groundwater Sources Using an Innovative IoT Sensor**  
Anjali Chadha, 15, Sophomore, School: duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig
- EBED036** **Balance Temperature, Conveniently: Designing an Affordable and Easy-to-Implement Wireless Zoning System**  
Benjamin Jiang, 17, Junior, School: duPont Manual Magnet High School, Louisville, Kentucky, T: Megan Thomas
- TMED062** **New Home Hazard: Exploring Flexible Flooring Cytotoxicity**  
Analisa Marie Conway, 18, Junior, School: Assumption High School, Louisville, Kentucky, T: Fred Whittaker
- LOUISIANA**  
*Baton Rouge, USLA01, Louisiana Region VII—Science and Engineering Fair*
- CELL021** **Epigenetic and Biotransformation Effects of Hookah Smoke Extract on Human Oral Keratinocytes**

- Anusha Zaman, 16, Sophomore, School: Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Tiffany Moore
- MATS001T** **On the Glow: Assessing the Luminosity, Durability, and Reflectivity of Strontium Aluminate Applied to Road Striping**
- ## Meredith Claire Guidry#, 18, Senior, Madison Ann Hasenkampf#, 18, Senior, School: St. Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina
- PLNT046** **The Effect of Sodium Chloride on Hybrid Taxodium Species**
- Anna Colleen Koonce, 17, Junior, School: St. Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina
- Bossier City, USLA02, Bossier Parish Community College Louisiana Region I Science and Engineering Fair*
- CELL005** **Can Oxidative Stress Increase Transcriptional Mutagenesis and Aggregate Apha-Synuclein Protein?**
- Jemma Elizabeth Clary, 17, Junior, School: Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements
- EGPH006** **LED: Is It Really a More Efficient Future?**
- Xiang Tang, 16, Sophomore, School: Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements
- ENBM012** **Designing Oral Implants to Dissipate Occlusal Load**
- Behram Neville Dossabhoy, 18, Senior, School: Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements
- Houma, USLA03, Terrebonne Parish Science Fair*
- ANIM062** **Polycelis felina Grows with the Flow**
- Mackenzie Anne Martin, 16, Sophomore, School: South Terrebonne High School, Bourg, Louisiana, T: Chris Brown
- MATS013** **Childproof?**
- Kylee Rene Porche, 18, Junior, School: South Terrebonne High School, Bourg, Louisiana, T: Chris Brown
- Lafayette, USLA04, Louisiana Region VI Science and Engineering Fair*
- BEHA009** **Feeling the Heat and the Need to Cheat: A Case Study of the Correlation Between Academic Dishonesty and Responses to Common Stressors Experienced by Fourth Through Twelfth Grade Students in a Private School Setting in South Louisiana**
- Hallee Mire, 15, Freshman, School: Catholic High School, New Iberia, Louisiana, T: Michelle Stelly
- BMED017** **The Difference Between Electrolytes from Food and Drink Sources**
- Brooke Alexandra Couvillon, 17, Junior, School: Ovey Comeaux High School, Lafayette, Louisiana, T: Lisa Ranney
- TMED006** **Repelling What Bugs You: Creating an All Natural, Antiseptic, Safe, and Effective Biopesticide Mosquito Repellent**
- Matthew David Fanguie, 17, Junior, School: Catholic High School New Iberia, New Iberia, Louisiana, T: Michele Stelly
- Lake Charles, USLA05, Louisiana Region V Science and Engineering Fair*
- ENMC011** **A Brief Study in the Effects of the Bernoulli Principle When Applied to an Underwater, Inverted Foil**
- Donald Edward Martin, 17, Sophomore, School: Academics Etc., Lake Charles, Louisiana, T: Katherine Martin
- MATS014** **Electromagnetic Applications**
- Jason Dong, 17, Junior, School: Alfred M. Barbe High School, Lake Charles, Louisiana, T: Jackie Royer
- New Orleans, USLA08, Greater New Orleans Science and Engineering Fair*
- ENBM013** **Modeling Neural Disorder via Involuntary Response Simulator**
- Bergen Loren Sanderford, 19, Senior, School: Isidore Newman School, New Orleans, Louisiana, T: Matthew Jones
- MATH012T** **A Method for Analyzing Basketball Teams**
- Srijan Duggal, 18, Senior, Shuzheng Zheng, 19, Senior, School: Isidore Newman School, New Orleans, Louisiana, T: Matt Jones
- MATS010** **Novel Formulation of Highly Stable Metal-Organic Inks for Printed Electronic Applications**
- # Mason Richard Varuso, 19, Senior, School: Patrick F. Taylor Science & Technology Academy, Westwego, Louisiana, T: Amanda Godshaw

*Ruston, USLA09, Louisiana Region II Science and Engineering Fair*

**PHYS060 All About that Bass**

Caroline Isabella Whisonant, 15, Freshman, School: Winnfield Senior High School, Winnfield, Louisiana, T: Carolyn Lang

*Baton Rouge, USLA50, Louisiana Science and Engineering Fair*

**ANIM035 Erasure of Neural Extracellular Matrix to Ameliorate Aging-Dependent Cognitive Decline**

Alicia Lauren Smith, 19, Senior, School: Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements

**BCHM013 Synthesis of a Fusarochromanone Analog and Its Efficacy in Treating Triple Negative Breast Cancer**

Sunjay Letchuman, 18, Junior, School: Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements

**BEHA035 Student-Centered vs. Teacher-Centered Learning: An Examination of Performance and Preference**

Lara Paige Nicholson, 17, Junior, School: Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

**ENMC047 The Effects of Pitch on Propeller Thrust**

Anna Claire LeJeune, 16, Sophomore, School: Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

**MCRO040 Unraveling the Role of Novel Type I Interferon in Human Paramyxovirus Infections**

Hannah Lizzette Miletello, 17, Junior, School: Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

**PHYS038 Quantum Eraser with Applications to Optical Quantum Information Processing of Polarization-Encoded Qubits**

Mary Catherine Lorio, 17, Junior, School: Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

**MAINE**

*Waterville, USME50, Maine State Science Fair*

**EBED027 Smart Road Signs: The Bluetooth LE-Based Safety System for Pedestrians**

Seung Heon Song, 18, Sophomore, School: Gould Academy, Bethel, Maine, T: Peter Southam

**ENBM060 The Future of Prosthesis: The Design and Production of a Neural Prosthetic Comprised of Ionic Polymer-Metal Composites**

# Sydney Victoria McDonald, 18, Senior, School: Bangor High School, Bangor, Maine, T: Cary James

**TMED035 Developing an Alternative Treatment to Luminal B Breast Cancer by Targeting DNA Repair Mechanisms**

Lily Margaret Waddell, 17, Junior, School: Bangor High School, Bangor, Maine, T: Cary James

**MARYLAND**

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

**BEHA045 Evaluating Autism Connectivity Abnormalities Through Functional Fingerprinting**

William Edwin Snyder, 19, Senior, School: Severna Park Senior High School, Severna Park, Maryland, T: Lindsay Mossa

**EAEV063 Can Ants Help Save the Bees? Developing a Better Model for Screening Pesticide Effects on Honeybee Social Behavior**

James Donovan Sappington, 16, Sophomore, School: South River High School, Edgewater, Maryland, T: Matthew Schrader

**EGCH031 Development of Novel Additive-Enhanced Dye for Environmentally Friendly, Sustainable, and Efficient Dye Sensitized Solar Cells**

# David Andrew Kravets, 18, Senior, School: Chesapeake Science Point, Hanover, Maryland, T: Ashish Vadalia

*Frederick, USMD02, Frederick County Science and Engineering Fair*

**BCHM024 An Achilles Heel in Oncogenic Ras**

Evan Paul Yamaguchi, 18, Senior, School: Governor Thomas Johnson High School, Frederick, Maryland, T: Nadya Tarasova

*Silver Spring, USMD03, ScienceMontgomery*

**BMED036 Innovative Optimization for Malnutrition Treatment**

Garyk Jandl Brixl, 16, Sophomore, School: Winston Churchill High School, Potomac, Maryland, T: Virginia Brown

**EAEV032T Using 3D Modeling to Save our Reefs: Accuracy of Reef Assessment Techniques Using Structure from Motion**

Clara Megan Benadon, 16, Sophomore, Allie Mary Battista, 16, Sophomore, Schools: Poolesville High School, Poolesville, Our Lady of Good Counsel High School, Olney, Maryland, T: Michael Haight

**MATH027 A Participant-Specific Estimate of Expected Organ Quality in Kidney Paired Donation**

Naveen Krishna Durvasula, 16, Sophomore, School: Montgomery Blair High School, Silver Spring, Maryland, T: Angelique Bosse

**PHYS028 On T-Reflection via Analytic Continuation in Quantum Mechanics**

Sambuddha Chattopadhyay, 18, Senior, School: Montgomery Blair High School, Silver Spring, Maryland, T: Angelique Bosse

*Largo, USMD05, Prince George's Area Science Fair*

**CBIO023 Leaf Me to Die**

Marianne Nicole Beaulieu, 16, Sophomore, School: Great Mills High School, Great Mills, Maryland, T: Rhonda Morgan

**CELL032 Division or Inhibition? The Effect of Antioxidants on Cell Division and Differentiation**

Gayathri Plakkot, 17, Junior, School: Huntingtown High School, Huntingtown, Maryland, T: Radhika Plakkot

**EGCH016T Effects of Contaminants on Acid Gas Pyrolysis**

Hunter Noriesta Whaples, 18, Senior, Duy Anh Nguyen, 18, Senior, School: Eleanor Roosevelt High School, Greenbelt, Maryland, T: Jennifer Morgenthaler

**MATS035 New, But Reused: Recycled Insulation**

Abby Sarah Polsky, 17, Junior, School: Great Mills High School, Great Mills, Maryland, T: Rhonda Morgan

*Towson, USMD06, Baltimore Science Fair*

**EGPH017 Catching the Sun with Transparent Solar Cells: Application of Natural Dye-Sensitized Solar Cells as BIPVs**

Sabahat Fatima, 18, Senior, School: Al Rahmah School, Windsor Mill, Maryland, T: Nahla Aboushaara

**MCRO042 Dethiosulfovibrio Strain F2b: A New Non-Thiosulfate Reducing Bacterium that Degrades Mariculture Waste**

Stephen Francis Grabowski, 19, Senior, School: Baltimore Polytechnic Institute, Baltimore, Maryland, T: Lisa Fridman

**PHYS040 Deciphering the Sedimentary Record of Galle Crater, Mars**

Alida Schott, 17, Junior, School: Baltimore Polytechnic Institute, Baltimore, Maryland, T: Lisa Fridman

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

**ENEV080 On The Go: A Solar Power Heater Kit**

Jordan Isaiah Pope, 17, Junior, School: Paul Laurence Dunbar High School, Baltimore, Maryland, T: Christopher Fasone

**MASSACHUSETTS**

*Bridgewater, USMA01, Massachusetts Region V Science Fair*

**EAEV026 The Study of *Hemigrapsus sanguineus* Population Density and Genetic Variation**

Margaret Slein, 18, Senior, School: Archbishop Williams High School, Braintree, Massachusetts, T: Jordana Churchill

*Somerville, USMA02, Massachusetts Region IV Science Fair*

**MCRO017 To Floss, or Not to Floss: An Oral Microbiome Investigation**

Vivek Gopalakrishnan, 18, Senior, School: Lexington High School, Lexington, Massachusetts, T: Parul Kumar

*Fall River, USMA03, Massachusetts Region III Science Fair*

**BEHA015 Psychosocial Turmoil**

Meredith Blaise, 16, Sophomore, School: Bishop Feehan High School, Attleboro, Massachusetts, T: Amy Clark

- Worcester, USMA05, Massachusetts Region II State Science Fair
- ANIM037T** **The Effects of Exercise at Different Stages of Life on the Longevity of *C. elegans***  
Grace Elizabeth Lyons, 18, Junior, Jose Maria Garcia-Chope, 19, Senior, School: Bancroft School, Worcester, Massachusetts, T: Taryn Surabian
- BMED025** **Unsupervised Analysis of Gene Expression in Neurological Animal Models Reveals Spatiotemporal Differences between Developing Mouse and Human Brains**  
Kevin Hu, 17, Junior, School: Massachusetts Academy of Math and Science, Worcester, Massachusetts, T: Siobhan Curran
- EBED014** **A Vibrating Watch for the Visually Impaired**  
Michelle Loven, 17, Junior, School: The Massachusetts Academy of Math and Science, Worcester, Massachusetts, T: Siobhan Curran
- Boston, USMA06, Massachusetts Region VI Science Fair
- EAEV019** **Are These Plants GMO?**  
Luis Nicolau Pires, 16, Sophomore, School: Excel High School, Boston, Massachusetts, T: Ledilla Bokas
- PLNT063T** **The Effects of Mycorrhizal Fungi on the Growth of Tomato Plants**  
Rashawn Shaw, 19, Senior, School: Excel High School, Boston, Massachusetts, T: Ivyrose Likis Andrew Paradis, 20, Senior, School: Excel High School, Boston, Massachusetts, T: Ivyrose Likis
- Cambridge, USMA50, Massachusetts State Science & Engineering Fair
- ANIM014** **Re-Evaluating Reproduction: The Transgenerational Effect of High-Fat Dairy Intake on Fertility in *Drosophila melanogaster***  
Evan James Mizerak, 18, Junior, School: Wachusett Regional High School, Holden, Massachusetts, T: Nicholas Guerin
- ANIM021** **The Effects of Turmeric and Bovine Collagen on the Regeneration of *Dugesia dorotocephala***  
Imane Bouzit, 17, Junior, School: Pioneer Charter School of Science II, Saugus, Massachusetts, T: Richea Smith
- BEHA027T** **How Effective Is Your Virtual Reality Experience?**  
Cristian Figueroa, 19, Senior, Kevin Turcios, 18, Senior, School: East Boston High School, East Boston, Massachusetts, T: John Menkens
- CELL015** **Development of an Antigen-Detection Diagnostic Assay for Lyme Disease**  
Sophia Tang, 19, Senior, School: Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman
- CELL054** **Fixing Oxidative Damage: The Effect of Antioxidants on Telomere Length**  
Nicole Ashley Tanenbaum, 18, Senior, School: Taunton High School, Taunton, Massachusetts, T: Amanda Machado
- EAEV020** **The Effect of Wi-Fi on Plant Health**  
Kristen Elizabeth Stawasz, 17, Junior, School: Westfield High School, Westfield, Massachusetts, T: Jon Tyler
- EGCH010** **Analyzing Algal Lipid Content to Optimize Biofuel Production**  
Katherine Beadle, 19, Junior, School: Bishop Feehan High School, Attleboro, Massachusetts, T: Eileen Correia
- ENMC034T** **Analysis of Airborne Wind Energy Systems in a Wind Tunnel to Enhance Electricity Generation Efficiently**  
Charles Johannes Fenske, 18, Junior, Theo Calvin Guerin, 18, Senior, School: Falmouth Academy, Falmouth, Massachusetts, T: Alison Ament
- MATH022** **Safer Security: A Novel Algorithm for Detecting Carmichael Numbers**  
Sathwik Karnik, 17, Junior, School: Massachusetts Academy of Mathematics and Science, Worcester, Massachusetts, T: Siobhan Curran
- MICHIGAN**
- Detroit, USMI02, Science and Engineering Fair of Metropolitan Detroit
- BMED037** **A Novel Application of Microfluidic Assay to Evaluate the Role of Calponin in Platelet Function and Clot Formation**



- Neha Seshadri, 17, Junior, School: Skyline High School, Ann Arbor, Michigan, T: Teresa Schneider
- CHEM027T** **A Novel Zwitterionic Superparamagnetic Iron Oxide Nanoparticle Synthesis**  
Marlies Raskin Michielssen#, 18, Senior, School: Washtenaw International High School, Ypsilanti, Michigan, T: Alyson Thompson Shrikant Chand#, 17, Junior, School: Detroit Country Day School, Beverly Hills, Michigan, T: Alyson Thompson
- EAEV033** **Impact of Road Salt Usage on Atmospheric Concentrations of Cl & Na PM 2.5**  
Rashad Keith Prendergast, 18, Senior, School: Cass Technical High School, Detroit, Michigan, T: Sonya Ross
- EGCH017** **A Smart Light-Tracker Using Machine Learning and Dye-Sensitized Solar Cells**  
# Malini Mukherji, 18, Junior, School: Notre Dame Preparatory, Pontiac, Michigan, T: Jocelynn Yaroch
- ENBM035** **High-Dimensional Single-Cell Cytometry Analysis for Understanding Cancer Stemness**  
Madeleine Yang, 16, Sophomore, School: Detroit Country Day School, Beverly Hills, Michigan, T: Ross Arseneau
- MATS023** **Optimization of Electro Pulsing on Yttria-Stabilized Tetragonal Polycrystalline Zirconia (3Y-TZP) Ceramic Water Filter Sintering**  
Richard Li Yang, 17, Junior, School: Troy High School, Troy, Michigan, T: Rebecca Brewer
- SOFT020** **Cloud-Based Data Preparation for Medical Observational Research**  
# Varun Sathyan, 17, Senior, School: Athens High School, Troy, Michigan, T: Rachel Peterson
- Flint, USMI03, Flint Regional Science Fair*
- CELL058** **Testing the Geometrical and Chemical Structure of Methylbutenol Synthase: Finding a New Method for Rubber Production**  
Zaid Haque, 17, Junior, School: Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: David Allan
- ENEV029** **The Construction of a Price Reduced 3D Printed Turbidity Meter**  
Samuel Anthony Maher, 17, Junior, School: Arthur Hill High School, Saginaw, Michigan, T: Mark Hellebuyck
- MCRO022** **Elucidating the Mechanism of Virulence in *E. coli* O104:H4: Identification of the Role of Biofilms in Stx-Phage Induction**  
Neehal Reddy Tumma, 15, Sophomore, School: Port Huron Northern High School, Port Huron, Michigan, T: Nico Fernandez
- Kalamazoo, USMI07, Southwest Michigan Science & Engineering Fair*
- CHEM064** **Phosphorus Partitioning and Recovery from Riverbed Sediment Obtained From a Eutrophic Watershed in Southwest, MI**  
Savannah Grace McDowell, 18, Senior, School: Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan, T: Joseph Thorstenson
- CHEM065T** **Single and Two-Photon DNA-Based Fluorescence Sensors for Pb<sup>2+</sup> and Hg<sup>2+</sup>**  
Liya Jiang Jin, 17, Junior, Nathaniel Goenawan, 17, Junior, School: Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan, T: Joseph Thorstenson
- Berrien Springs, USMI08, Berrien County Regional Science Fair*
- BMED063** **Rare Amino Acids Accelerate Cancer Growth**  
Nathaniel Chung, 16, Freshman, School: Berrien County Math and Science Center, Berrien Springs, Michigan, T: Denise Smith
- CELL057** **Detecting Dust and Dander Allergens in IgE Sensitized Individuals Using a Capillary Tube Precipitation Test: A New Non-Intrusive Antigen/Antibody Reaction Test**  
Audrey Jules Bakerson, 15, Freshman, School: Berrien County Mathematics and Science Center, Berrien Springs, Michigan, T: Denise Smith
- Detroit, USMI50, Michigan Science and Engineering Fair*
- CELL042** **The Effect of Mechanical Compression on Cancer Cell Proliferation**  
Katharine Tang Shao, 17, Junior, School: Detroit Country Day School, Beverly Hills, Michigan, T: John Dougherty

- ENBM046** **Investigating Tuned Magneto-Rheological Reservoirs, Compression Systems, and Shear Thickening Fluids to Improve Mean Peak Acceleration as Measured by High-G Accelerometers in Hockey Headgear**  
Clara Elizabeth Wagner, 19, Senior, School: Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: David Allan
- ##
- MINNESOTA**  
*Duluth, USMN02, Northeast Minnesota Regional Science Fair*
- CBIO001** **Mathematical Analysis of Melanocyte Patterns on *Danio rerio***  
# Frances Carol Slater, 18, Junior, School: Cloquet Senior High School, Cloquet, Minnesota, T: Cynthia Welsh
- ENEV007T** **"A Nice Fracking Solution," Phase III: The Implementation of a Testing Protocol to Test De-Icing Qualities of Fracking Salt Pellets When Compared to Road Salt (NaCl) and to Test Plausibility of Implementation of Fracking Salt Pellets as a Possible Northern Road De-Icer**  
Levi Allen Peterson, 18, Senior, Jacob Tyler Schmidt, 18, Senior, School: Cloquet Senior High School, Cloquet, Minnesota, T: Cynthia Welsh
- TMED002** **"Anaphylactic Shocker!:" The Use of a Dynamic QR Code Medical Bracelet To Administer a Practice Epinephrine Auto-Injector during a Staged Medical Emergency**  
# Katelyn Jo France, 17, Junior, School: Hinckley-Finlayson High School, Sandstone, Minnesota, T: Dennis Boxrud
- Mankato, USMN03, Southern Minnesota Regional Science and Engineering Fair*
- ANIM006T** **Toxicity Analysis of Multiple Paraben Exposure on *Drosophila melanogaster***  
# Ella Suzanne Haefner#, 19, Senior, Elaine Rosalie Adams#, 19, Senior, School: Loyola Catholic School, Mankato, Minnesota, T: Sue Goebel
- CHEM013** **A Novel Approach to Minimize Road Salt Contamination in Both Terrestrial and Aquatic Ecosystems**  
Alyssa Marie Compton, 19, Senior, School: Loyola High School, Mankato, Minnesota, T: Sue Goebel
- MATH010** **Polynomials in  $Z[x]$  and Irrationality Measure**  
## Griffin Nicolas Macris, 18, Senior, School: New Prague High School, New Prague, Minnesota, T: Jimmy Thorne
- PLNT010** **Soil Amendment Optimization, Phase IV: Enhancing the Performance of Biochar and Hydrophilic Polymer Enriched Soils with the Incorporation of Corn Gluten Meal**  
# Samantha Jo Guldán, 17, Junior, School: Cathedral High School, New Ulm, Minnesota, T: Tim Guldán
- Minneapolis, USMN04, Twin Cities Regional Science Fair*
- EAEV014** **The Effects of Bacillus Bacteria on the Invasive Species *Lemna minor* (Duckweed)**  
# Claire Elizabeth Wentzclaff, 18, Junior, School: Burnsville High School, Burnsville, Minnesota, T: Jennifer Hugstad-Vaa
- ENBM027** **3D Printable Transtibial Prosthetic**  
Everett Adien Jeffrey Kroll, 17, Sophomore, School: Stillwater Area High School, Stillwater, Minnesota, T: Todd Kapsner
- MCRO009T** **Investigating a New Approach for Biosynthesis of Green Pesticide 5-Aminolevulinic Acid Using Engineered *E. coli* and Biomass**  
Alex Jie Li, 17, Junior, Rebecca Yinbei Li, 16, Sophomore, School: Mounds View High School, Arden Hills, Minnesota, T: Brian Peloquin
- Crookston, USMN05, Western Minnesota Regional Science Fair*
- BEHA004** **To Vaccinate or Not to Vaccinate? That Is the Question**  
Olivia Sunshine McNair, 16, Freshman, School: Perham High School, Perham, Minnesota, T: Shawn Stafki
- Winona, USMN06, Southeast Minnesota Regional Science Fair*
- BEHA047T** **Effects of Cellular Devices on Teen Driving**  
Karen Nicole Scharlau, 18, Junior, School: Cochrane-Fountain City High School, Fountain City, Wisconsin, T: Sol Simon Makenna Mary Gabel, 17, Junior,

School: Cochrane Fountain City, Fountain City, Wisconsin,  
T: Simon Solomon

Rochester, USMN07, Rochester Regional Science & Engineering Fair

**ENBM072 Biophysical Validation of Electroporation as a Unique Method of Improving Oral Hygiene and Reducing Systemic Morbidity: Development of a Novel Electroporating Toothbrush (ePrush)**

Hemant Ojas Asirvatham, 15, Freshman, School: Century High School,  
Rochester, Minnesota, T: Kirk Payne

**ROBO021 Detecting Abnormal Cells Using Artificial Intelligence**

Gaurav Behera, 18, Junior, School: Century High School, Rochester,  
Minnesota, T: Cheryl Moertel

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

**BMED018 Assessing Epilepsy Medicine by Measuring the Planarian Neural Activity Using Suction Electrode and Patch Clamp Amplifier**

Anna Faye Zheng, 16, Junior, School: Saint John's Preparatory School,  
Collegeville, Minnesota, T: Latha Ramakrishnan

**CELL008 Using Genome Sequencing to Develop a Probiotic within the Turkey Gastrointestinal Tract**

Joshua Matthew Proehl, 17, Junior, School: New London-Spicer High School,  
New London, Minnesota, T: Laura Molenaar

Minneapolis, USMN09, St. Paul Science Fair

**CELL006 Controlling Noxa Protein Expression by a Novel Approach to Study its Function in Leukemic Cells, Phase II**

Geetanjali Rajamani, 18, Senior, School: Highland Park Senior High School,  
Saint Paul, Minnesota, T: Sarah Connelly

**ENBM014 Inexpensive Glucose Monitoring Device for Diabetics Using Capillary Action of Crosslinked Sensing Fluid, Year II**

## Serena Liang Jing, 19, Senior, School: St. Paul Central High School, St. Paul,  
Minnesota, T: Princesa VanBuren Hansen

Minneapolis, USMN10, Western Suburbs Science Fair

**CBIO009 Window to the Brain: Using Retinal Biomarkers to Predict Progression of Alzheimer's and Parkinson's Diseases**

# Archana Bhagyalakshmi Murali, 18, Senior, School: Breck School, Golden  
Valley, Minnesota, T: Princesa VanBuren Hansen

**CELL009 Exploring the Relationship between the PITX3 Gene and Pituitary as a Site for Neural Regeneration through Blastocyst Complementation of Knockout Brains for the Treatment of Neural Degenerative Diseases**

Gauri Chitra Binoy, 18, Senior, School: Wayzata High School, Plymouth,  
Minnesota, T: Princesa VanBuren-Hansen

**ENBM015 Bioengineering the Lung: Directed Differentiation of Human Pluripotent Stem Cells into Definitive Endoderm on a Lung Extracellular Matrix**

Meghana Iyer, 18, Senior, School: Edina High School, Edina, Minnesota,  
T: Stephen Sanger

St. Paul, USMN50, Minnesota Academy of Science State Science & Engineering Fair

**BMED060 Selective Inhibition of Metastatic Cancer Cell Migration**

Akshat Singh, 16, Sophomore, School: Century High School, Rochester,  
Minnesota, T: Justin Howard

**EAEV054 An Innovative Solution for Water Filtration in Third World Countries**

Rohan Patel, 16, Sophomore, School: Mayo High School, Rochester,  
Minnesota, T: Aaron Larson

**ENEV072 Unleashing the Way! Remediation of Lead Contaminated Water with *Coriandrum sativum* (Cilantro) Biochar**

Manashree Seth Padiyath, 15, Freshman, School: Woodbury High School,  
Woodbury, Minnesota, T: Kaarin Schumacher

**ENMC048 Investigating Flow in Rotating Cylindrical Tubes**

Hannah Elisabeth Lynn Farmer, 16, Freshman, School: Stillwater Area High  
School, Oak Park Heights, Minnesota, T: David Kahl

**TMED047 Solving the Hip Fracture Crisis: Utilizing Silica Nanoparticles to Synthesize a Flexible, Affordable, and Bio-Friendly Shear Thickening Fluid Based Innovation**

# Avni Jain, 15, Sophomore, School: Eden Prairie High School, Eden Prairie,

Minnesota, T: Caroline Ylitalo

## MISSOURI

*Cape Girardeau, USMO01, Southeast Missouri Regional Science Fair*

**CHEM019 A Study of the Effects of *Vibrio fischeri* on Atmospheric Carbon Dioxide Consumption**

Emily G. Mouser, 18, Senior, School: Dexter Senior High School, Dexter, Missouri, T: Tiska Rodgers

**PLNT015 Mycorrhizal Fungi as an Alternative to Conventional Fertilizers**

Connor Joseph Bock, 17, Sophomore, School: Oak Ridge High School, Oak Ridge, Missouri, T: Mark Gihring

*Jefferson City, USMO02, Lincoln University Regional Science Fair*

**BEHA024 Kids on Track: Investigating the Effectiveness of a Rewards-Based Fitness Program Using Activity Trackers with Elementary Students**

Madison Lynn Stark, 16, Sophomore, School: Tusculumbia High School, Tusculumbia, Missouri, T: Constance Wyrick

**BEHA055 And the Winner Is...: Developing a Computer Program to Investigate Neural Competition with Multimodal Stimuli**

Caleb Jireh Martonfi, 15, Freshman, School: Tusculumbia High School, Tusculumbia, Missouri, T: Constance Wyrick

*Joplin, USMO03, Missouri Southern Regional Science Fair*

**BCHM020 Effect of Nutraceutical Supplements on Beta Amyloid (A $\beta$ ) Nucleation and Growth**

# Farhath Sulthana, 18, Senior, School: Joplin High School, Joplin, Missouri, T: Karis Boyer

**ROBO039 Adaptive Variational Memory Encoding for Recurrent Data Synthesis**

Samuel Williamson Griesemer, 18, Senior, School: Joplin High School, Joplin, Missouri, T: Karisa Boyer

*Kansas City, USMO04, Greater Kansas City Science & Engineering Fair*

**ANIM057 Formation and Change of Vocal Dialects in Captive Gentoo Penguin *Pygoscelis papua* Colonies**

## Andrea Dahl, 18, Senior, School: Olathe North High School, Olathe, Kansas, T: Rebecca Groebe

**BCHM026 Role of Alpha-Synuclein (Alpha-syn) in Regulation of Retinal Iron Homeostasis by Promoting Uptake of Transferrin-Bound Iron (Tf-Fe) in Human RPE 47 Cells: Potential for Novel Treatment for Visual Manifestation of Parkinson's Disease (PD)**

Stuti Dalal, 16, Sophomore, School: Shawnee Mission East, Prairie Village, Kansas, T: Miles Martin

**BEHA060 A Novel, Telemedicine Diagnosing and Monitoring Tool for Parkinson's Disease: The Use of Digital Action Unit Biomarkers Generated by Spontaneous and Posed Facial Expressions**

# Erin Smith, 18, Junior, School: Shawnee Mission West High School, Overland Park, Kansas, T: Brenda Bott

*Saint Charles, USMO05, Missouri Tri-County Regional Science and Engineering Fair*

**PLNT065 Investigation into *Arabidopsis thaliana* Circadian Systems**

Abigail Marie Hunt, 18, Junior, School: Wentzville Holt High School, Wentzville, Missouri, T: Jennifer Mallery

*Saint Joseph, USMO06, Mid-America Regional Science and Engineering Fair*

**MCRO027 Construction and Mutational Analysis of a Heavy Metal Biosensor in *E. coli***

## Anthony Joseph Eckdahl, 19, Senior, School: Central High School, Saint Joseph, Missouri, T: Jay Meyers

*St. Louis, USMO07, Academy of Science—Greater St. Louis Science Fair*

**BEHA028 Education on Stereotypes: Are Children More Receptive than Adults?**

Deepa Chittoor Bhuvanagiri, 18, Junior, School: Eureka High School, Eureka, Missouri, T: Jaishree Chittoor

**CELL027 Development and Characterization of a Novel Zinc-Finger Construct for Targeted Epigenetic Modification**

# Jessica Jasing Sun, 18, Senior, School: Parkway Central High School, Chesterfield, Missouri, T: Lee Johnson

Springfield, USMO08, Ozarks Science and Engineering Fair

**ANIM045 Photo- and Chemotactic Response of *Orconectes virilis*: Determining the Efficacy of a Positive and Negative Taxis System for Nuisance Crayfish**  
Kelli Michelle Alford, 17, Sophomore, School: Camdenton High School, Camdenton, Missouri, T: Chris Reeves

**ANIM053 The Establishment of a Permanent Cell Line of the Native Pollinator *Bombus impatiens*: Applications in Entomology, Agricultural Science, and Nosema Research**  
Olivia Ann Kline, 18, Junior, School: Camdenton High School, Camdenton, Missouri, T: Chris Reeves

Hillsboro, USMO09, Mastodon Art/Science Regional Fair

**ENBM036 Detecting the Elusive Lyme Disease: Creating a Novel Lateral Flow Test for Detection of *Borrelia burgdorferi* in Ticks**

# Luke Daniel Little, 17, Junior, School: Timber Ridge Scholars Academy, Pacific, Missouri, T: Pamela Wamsley

**MCRO032 Saving the North American Ash Tree, Year Two: Establishing *Metarhizium anisopliae* as an Endophyte in *Fraxinus uhdei***

# Nicolas A. Wamsley, 18, Junior, School: Timber Ridge Scholars Academy, Pacific, Missouri, T: Pamela Wamsley

Fayette, USMO10, Central Methodist Eagles Science and Engineering Fair

**BEHA050 The Effects of the Number of Brake Lights Inferring Difference in Light Intensity on Reaction Time of the Following Driver**

Sarah Ricole Mason, 19, Senior, School: Southwest Livingston County R-I High School, Ludlow, Missouri, T: Janel Coulson

## MISSISSIPPI

Biloxi, USMS01, Mississippi Region VI Science and Engineering Fair

**EAEV083 PET Degradation by *Ideonella sakaiensis*: A Hypothetical Model**  
Angelica Mercedes Sinclair, 19, Senior, School: Starkville High School, Starkville, Mississippi, T: Michael Adam

**ENEV073 Reducing Harmful Car Emissions by Interior Coating of a Non-Noble Metal Catalyst**

Gary Thanh Nguyen, 18, Junior, School: Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Elizabeth Morgan

Booneville, USMS02, Mississippi Region IV Science Fair

**EAEV085 Developing a Numerical Box Model to Compute Algae Concentration, Year 2**

## Sichen Shawn Chao, 18, Senior, School: Oxford High School, Oxford, Mississippi, T: Sarah Robinson

Greenville, USMS03, Mississippi Region III Science and Engineering Fair

**ANIM046 Survey and Shedding Characteristics of Trematodes in Catfish Ponds**

## Allison Lauren Wise, 18, Senior, School: Saint Joseph's Catholic School, Greenville, Mississippi, T: Eddie Dennis

**PLNT047 Molecular (DNA) and Biochemical Investigations into Agricultural Weed Populations of the South Eastern United States**

Indu Priya Nandula, 16, Sophomore, School: Cleveland High School, Cleveland, Mississippi, T: Jody Wright

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

**BCHM035 Development of a Simple and Efficient Method for Site-Specific Mutagenesis**

## Allen Yang Huang, 17, Senior, School: Oak Grove High School, Hattiesburg, Mississippi, T: Mark Holcomb

**CELL028 Determining RNA Interference in Mouse Embryonic Stem Cells and Their Differentiated Cells Using a Novel dsRNA-Based Antiviral Assay**

## Jason Guo, 18, Senior, School: Oak Grove High School, Hattiesburg, Mississippi, T: Mark Holcomb

**PHYS056 27.5" or 29" Rolling Friction vs. Agility**

Colton Anthony Ziemba, 16, Junior, School: Russell Christian Academy, Meridian, Mississippi, T: Marti Pulido

Jackson, USMS05, Mississippi Region II Science and Engineering Fair

**ANIM051 (Fly) Food for Thought**

Vivian Heleana Pryor, 16, Sophomore, School: St. Andrew's Episcopal School, Ridgeland, Mississippi, T: Claudia Bhagat

- BMED061** **Development of Diet-Induced Insulin Resistance in *Drosophila melanogaster* and a Characterization and Comparison of the Anti-Diabetic Effects of Resveratrol and Pterostilbene, Part II**  
# Arko Somujjwal Dhar, 18, Junior, School: St. Andrew's Episcopal School, Ridgeland, Mississippi, T: Claudia Bhagat
- PLNT030** **The Effectiveness of Algae as a Negative Emission Technology**  
Daniel Ulion Joshua, 16, Sophomore, School: Madison Central High School, Madison, Mississippi, T: Amy Bennett  
*Mississippi State, USMS06, Mississippi Region V Science and Engineering Fair*
- EAEV043** **DSSCs and Their Potential for Clean Energy**  
Joseph Andrew Davide, 18, Junior, School: Kosciusko Senior High School, Kosciusko, Mississippi, T: John Banks
- EAEV087T** **Cleaning It Up! Self Filtration Container**  
Mark Austin Palmertree, 19, Senior, Riley James Watson, 18, Junior, School: Kosciusko Senior High School, Kosciusko, Mississippi, T: John Banks
- ENEV046** **Modeling Realistic Factors for the Improvement of SODIS-AOP**  
# Helen Haiyue Peng, 17, Sophomore, School: Starkville High School, Starkville, Mississippi, T: Sarah Langford  
*Oxford, USMS07, Mississippi Region VII Science and Engineering Fair*
- BCHM014** **Rooibos Tea (*Aspalathus linearis*): Comparison of Antioxidant Activity between Authentic and Commercial Samples along with Their UHPL Finger Printing in Order to Address the Issue of Adulteration**  
# Fatima Laraib, 19, Senior, School: Oxford High School, Oxford, Mississippi, T: Sarah Robinson
- ENEV030** **Environmental Impact of Artificial Sweeteners Acesulfame, Sucralose, and Saccharin in Nature**  
## Qihang Wang, 18, Junior, School: Oxford High School, Oxford, Mississippi, T: Sarah Robinson  
*University, USMS50, Mississippi Science and Engineering State Fair*
- CHEM068** **Search for New Chromophore Pairs for Triplet-Triplet Annihilation Upconversion**  
Sumar Beauti, 18, Senior, School: Oak Grove High School, Hattiesburg, Mississippi, T: Mark Holcomb
- ROBO047** **Braille Reading and Training System**  
Maggie Ford, 19, Senior, School: Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Elizabeth Morgan
- MONTANA**  
*Billings, USMT01, Billings Clinic Science Expo*
- EGCH020** **Analysis of Photocatalytic Performance in TiO<sub>2</sub>-Dye Sensitized Solar Cells Doped with Nanostructure Diatoms**  
Isaac Ryan Rost, 19, Senior, School: Baker High School, Baker, Montana, T: Linda Rost  
*Butte, USMT02, Montana Tech Regional Science and Engineering Fair*
- CBIO012** **Investigating the Role of Pseudogenes as the Source of Conserved Non-coding Elements in the Human Genome**  
# Joyce Muhan Liu, 18, Junior, School: Sentinel High School, Missoula, Montana, T: Kelly Nelson
- CELL022** **The Role of PAG1 and the SFKs in Neuroblastoma Tumor Formation and Invasion**  
# Shelby Auchincloss Kinch, 17, Junior, School: Hellgate High School, Missoula, Montana, T: Rob Jensen  
*Havre, USMT03, Hi-Line Regional Science and Engineering Fair-MSU-Northern*
- EGCH011** **Hydrogenation as a Method for Upgrading Lignin-Based Bio-Oil to High Value Chemicals**  
## Gabriella T.J. Blatt, 18, Senior, School: Big Sandy High School, Big Sandy, Montana, T: Melanie Schwarzbach
- PLNT016** **Glyphosate Concentrations in Organic vs. Conventional Wheat**  
Tyler Shaud Schwarzbach, 16, Sophomore, School: Big Sandy High School, Big Sandy, Montana, T: Melanie Schwarzbach  
*Great Falls, USMT04, Montana Region II Science and Engineering Fair*

- EAEV064T** **Water Filtration Using Silver Nanoparticle Impregnated Filter-Paper**  
Mackenzie Wiegand, 16, Sophomore, Layne Jones, 16, Sophomore, Madison Clio Wiegand, 16, Sophomore, School: Simms High School, Simms, Montana, T: Jordan Hollern
- MCRO023** **Analyzing the Antibiotic Properties of Snake Venom, Phase 1**  
Cody Owen Smith, 17, Sophomore, School: North Toole County High School, Sunburst, Montana, T: Amanda Becker-Nix
- Missoula, USMT50, Montana Science Fair*
- BCHM033** **Characterization and Testing of Compounds Produced by *Aspergillus turcosus* that Target Cancer-Associated Pathways**  
Niel Mondava, 17, Junior, School: Hellgate High School, Missoula, Montana, T: Rob Jensen
- BEHA040** **The Effect of Dual Neurotransmission on Male Aggression and Courtship in *Drosophila melanogaster***  
Lucy Ann Sirrs, 17, Sophomore, School: Hellgate High School, Missoula, Montana, T: Rob Jensen
- ENMC078** **Power Up with HOH**  
Hayden James Heilig, 18, Senior, School: Moore High School, Moore, Montana, T: David Chalmers
- NEBRASKA**  
*Curtis, USNE01, Central Nebraska Science and Engineering Fair*
- ANIM031T** **Effects of E-Cigarette Vapor on *Drosophila melanogaster***  
Sophia Renae Conant#, 17, Junior, Abby Marie Klammer#, 18, Junior, School: Adams Central Jr.-Sr. High School, Hastings, Nebraska, T: Sandra Kliever
- Nebraska City, USNE02, Greater Nebraska Science and Engineering Fair*
- PLNT029** **The Effects of Auxins and Cytokinins on the Survival of *Azospirillum lipoferum* and *Azospirillum brasilense* and the Root Colonization of *Zea mays***  
# Brock Patrick Vetric, 19, Senior, School: Lyons-Decatur Northeast High School, Lyons, Nebraska, T: Paul Timm
- TMED027** **Anticancer Effects of Plant-Derived Compounds on the NF-kB Signaling Cascade**  
Rahul Sai Guda, 16, Sophomore, School: Millard North High School, Omaha, Nebraska, T: Walter Mertz
- NEW HAMPSHIRE**  
*Concord, USNH50, New Hampshire Science & Engineering Expo*
- BEHA030** **Impact of Carbon Tax Policies on the Global Agricultural Economy: A Computational Spatial Partial Equilibrium Modeling Approach**  
# Mary Zhu, 19, Senior, School: Nashua High School South, Nashua, New Hampshire, T: Neil Claffey
- CBIO020** **A Computational Model of CRISPR/dCas9 Genetic Circuits: Towards Programmable Gene Therapy**  
# Shaan Ram Bhandarkar, 16, Sophomore, School: Phillips Exeter Academy, Exeter, New Hampshire, T: Panama Geer
- ENBM037** **Engineering Surface Chemistries to Improve Tissue-Material Integration in Medical Implants**  
Vinjai Vale, 17, Junior, School: Phillips Exeter Academy, Exeter, New Hampshire, T: Kyung Jae Jeong
- NEW JERSEY**  
*New Brunswick, USNJ01, Nokia Bell Labs North Jersey Regional Science Fair*
- ANIM025** **The Effects of Heart-Specific Downregulation of Histone Deacetylase, Rpd3, on Longevity**  
Catherine Chen, 17, Junior, School: Academy for Health and Medical Sciences, Bridgewater, New Jersey, T: Yongkyu Park
- BMED038** **The Effect of Oleic Acid on Intracellular Calcium through Liposome Formation**  
Clairisse Eunhae Whang, 17, Junior, School: Academy for Medical Science Technology, Hackensack, New Jersey, T: Donna Leonardi

- CBIO015** **Unbiased Computational Estimation of Huntington's Disease Mutation Frequency and Repeat Instability**  
# Jiwoo Lee, 18, Senior, School: Academy for Medical Science Technology, Hackensack, New Jersey, T: Donna Leonardi
- TMED021** **Exploiting Migration and Metabolism: A Novel Approach to Metastatic Cancers**  
John Roy Bularan Lozada, 18, Senior, School: Academy for Medical Science Technology, Hackensack, New Jersey, T: Donna Leonardi
- TMED022** **Predicting Lung Cancer Onset Using Segmentation and Classification**  
Neelay N. Trivedi, 16, Sophomore, School: Watchung Hills Regional High School, Warren, New Jersey, T: Nachiket Trivedi  
*Jersey City, USNJ02, Jersey City Medical Center/Barnabas Health STEM Showcase*
- BMED068** **A Scalable, Non-Invasive, and Digital Tool to Quickly Diagnose the Zika Virus by Applying Correlation Analysis, Edge Detection Methods, and K-Means Clustering to Fundus Images**  
Arsh Banerjee, 15, Freshman, School: Bayonne High School, Bayonne, New Jersey, T: Alexander Kuziola
- ENEV039** **Harmful Algae Bloom Prevention Using Stropharia Mycofiltration**  
Harshal Rajesh Agrawal, 16, Sophomore, School: Dr. Ronald E. McNair Academic High School, Jersey City, New Jersey, T: Jeremy Stanton  
*Lawrenceville, USNJ03, Mercer Science and Engineering Fair*
- CBIO016** **An Immunologic Basis for the Pathogenesis of Autism Spectrum Disorder: Toll-like Receptor Mechanisms and Downstream Processes**  
Kiruthika Devasenapathy, 18, Senior, School: West Windsor Plainsboro High School North, Plainsboro, New Jersey, T: James Looney
- TMED028** **Early Detection of Malaria Infection with Portable and Electricity Free Isothermal Loop Amplification (LAMP)**  
# Nikhil S. Gopal, 17, Junior, School: The Lawrenceville School, Lawrenceville, New Jersey, T: Linda Brzustowicz
- NEW MEXICO**  
*Albuquerque, USA150, National American Indian Science and Engineering Fair*
- EGPH036** **Thin Panel, Cylinder-Arrayed, Solar Water Heater**  
Nizhoni Tallas, 18, Senior, School: Navajo Preparatory School, Farmington, New Mexico, T: Yolanda Flores
- ENBM081** **A Technology Assisted Ketone Detecting Patch for the Noninvasive Detection of Type 1 Diabetes**  
# Anna Quinlan, 16, Sophomore, School: Menlo-Atherton High School, Atherton, California, T: Paul Quinlan  
*Albuquerque, USNM01, Central New Mexico Regional Science and Engineering Challenge*
- CELL049** **An Investigation into Caffeine as a Migraine Treatment and Its Effects on the Severity of Spreading Depolarizations**  
# Rusty Warren Ludwigsen, 17, Sophomore, School: The Early College Academy, Albuquerque, New Mexico, T: Mark Walker
- CHEM031** **Sweet Strength: The Retarder of Cement**  
Paris Charles Reuel, 17, Junior, School: V. Sue Cleveland High School, Rio Rancho, New Mexico, T: Angelica Lopez
- EAEV034** **Impacts of Altered Precipitation Regimes on the Distribution of Dryland Soil Nitrogen**  
## Jarek Vincent Kwiecinski, 17, Senior, School: Albuquerque Institute for Math and Science, Albuquerque, New Mexico, T: Michael Harris
- ENMC065** **Utilization of the Spidron System for Generating Force Absorbing Structures**  
Skyler Hughes, 18, Junior, School: Albuquerque Institute for Math and Science, Albuquerque, New Mexico, T: Michael Harris  
*Farmington, USNM02, San Juan New Mexico Regional Science and Engineering Fair*
- CHEM069** **Novel Experimentation in the Household Detection of Alpha and Beta Rays**  
# Xander Owen Jones, 16, Sophomore, School: Navajo Preparatory School, Farmington, New Mexico, T: Yolanda Flores



- MATS080** **A Low Pressure Graphene Epitaxy on Cu from Activated Solid Amorphous Carbon**  
 # Noah Bruno Manz, 18, Senior, School: Farmington High School, Farmington, New Mexico, T: Robert Watson  
*Grants, USNM03, Four Corners Regional Science and Engineering Fair*
- EBED015** **EYERONIC2**  
 Marc Miguel Cline Mirabal, 16, Freshman, School: Grants High School, Grants, New Mexico, T: Shelby Alexander
- PHYS014** **Theoretical Asteroid Repulsion**  
 Zachariah Elijah Goodrich, 17, Junior, School: Grants High School, Grants, New Mexico, T: Shelby Alexander  
*Las Cruces, USNM04, Southwestern New Mexico Regional Science and Engineering Fair*
- BEHA065** **RoboGlove: A Design for Engagement and Hedonic Motivation with Visual-Spatial for Deaf and Hearing Impaired Children, Phase II**  
 Hiba Muhyi, 18, Senior, School: Arrowhead Park Early College High School, Las Cruces, New Mexico, T: Rajaa Shindi
- EBED052** **EZsleep: A Low-Cost Wearable Device for Early Diagnosis of Obstructive Sleep Apnea - Validated by a Machine Learning Technique**  
 Mustafa Muhyi, 16, Sophomore, School: Arrowhead Park Early College High School, Las Cruces, New Mexico, T: Rajaa Shindi  
*Las Vegas, USNM05, Northeastern New Mexico Regional Science and Engineering Fair*
- CELL043T** **Modeling and Experimental Characterization of IgE Receptor Signaling, Year Two**  
 Alexander Latchesarov Ionkov#, 18, Junior, School: Los Alamos High School, Los Alamos, New Mexico, T: Ryan Suderman Priyanka V. Velappan#, 18, Junior, School: Los Alamos High School, Los Alamos, New Mexico, T: Nileena Velappan
- MATS020** **Graphene Odyssey 2: Graphene Production via Resonant Frequency Exfoliation**  
 Indigo Buenaventura Acosta, 15, Freshman, School: Taos Tyger/Acosta Home School, Taos, New Mexico, T: Laura Tenorio  
*Portales, USNM06, Southeastern New Mexico Regional Student Research Challenge*
- PHYS015** **Terraforming Mars: Can Its Soil Support Plant Life?**  
 Lydia Barron, 15, Freshman, School: Dora Consolidated Schools, Dora, New Mexico, T: Laura Wilbanks  
*Socorro, USNM50, New Mexico Science and Engineering Fair*
- BCHM034** **Lingering Heavy Metal and Metalliods in the *Allium cepa* Root Tip and Bulb from the Animas and San Juan Riverbeds, After the 2015 Gold King Mine Spill**  
 Sunny Nez, 18, Senior, School: Navajo Preparatory School, Farmington, New Mexico, T: Yolanda Flores
- EAEV075** **America's Farming Future: The Impact of Climate Change on Crop Yields**  
 Lillian Kay Petersen, 15, Freshman, School: Los Alamos High School, Los Alamos, New Mexico, T: Mark Petersen
- ENMC073** **Nuclear Thermal Rockets: Mars and Beyond**  
 # Sophia Li, 19, Junior, School: Los Alamos High School, Los Alamos, New Mexico, T: Katie Tauxe
- MATH046** **Decomposing Fractions into the Sum of Distinct Unit Fractions and Their Correlating Patterns**  
 AnaMaria Perez, 15, Freshman, School: Albuquerque Academy, Albuquerque, New Mexico, T: Kevin Fowler
- MCRO024T** **A Comparative Study of the Antimicrobial Effects of Transition Metal Nanoparticles**  
 Fernando Guerrero, 18, Senior, Richard Joseph Romero, 18, Senior, School: Rio Rancho High School, Rio Rancho, New Mexico, T: Jennifer Miyashiro
- NEVADA**  
*Elko, USNV01, Elko County Science Fair*
- BMED026** **Toishabui Medicine**  
 Destiny LittleSky Pete, 18, Junior, School: Owyhee High School, Owyhee,

- Nevada, T: Dietlinde Bener-Dann
- ENMC031 The Effects of Pre-Heating the Intake of an Engine on the Output of Emissions**  
 Kaycee Rae Smith, 17, Junior, School: Spring Creek High School, Spring Creek, Nevada, T: Daniel Mendez  
*Las Vegas, USNV02, Southern Nevada Regional Science and Engineering Fair*
- BMED046 "Catch a Whiff"**  
 Autumn Rose Smith, 16, Sophomore, School: Coral Academy of Science Las Vegas, Henderson, Nevada, T: Z. Gogebakan
- EBED019T Economical Optimal Optical Obstacle Proximity Detector**  
 Adam Walker, 17, Junior, Russell Collin Ro, 17, Junior, School: Advanced Technologies Academy, Las Vegas, Nevada, T: Scott Underwood  
*Reno, USNV03, Western Nevada Regional Science and Engineering Fair*
- EGPH021 Localizing Heat with Carbon Foam for Efficient Solar Desalination**  
 # Oliver Leitner, 17, Junior, School: The Davidson Academy of Nevada, Reno, Nevada, T: Elizabeth Walenta
- TMED037 Development of a Rapid, Low-Cost Assay Based on ZIKV NS1 Protein Functionalized Gold Nanorods on a Plasmonic Paper Substrate for ZIKV Diagnosis**  
 Yatin J. Chandar, 16, Sophomore, School: The Davidson Academy of Nevada, Reno, Nevada, T: Elizabeth Walenta
- NEW YORK**
- Poughkeepsie, USNY01, Dutchess County Regional Science Fair*
- BEHA061 Using a Virtual Environment to Indirectly Measure Racial Bias**  
 Daniel Fadi Busaba, 18, Senior, School: Spackenkill High School, Poughkeepsie, New York, T: Amy Matts
- Long Island, USNY02, Long Island Science and Engineering Fair*
- ANIM032 Manipulating Odor-Driven Behavior in *Drosophila melanogaster*: A Model to Investigate γ-Aminobutyric Acid (GABA) Deficiency Disorders**  
 Charity Nia Russell, 18, Senior, School: Commack High School, Commack, New York, T: Richard Kurtz
- BEHA031 Do Parents Really Know Best? Investigating the Relationship between Perceived Parental Goals and Academic Factors**  
 Anuj Gupta, 18, Senior, School: Roslyn High School, Roslyn Heights, New York, T: Allyson Weseley
- BEHA046 Dress to Impress: The Influence of the Enclothed Cognition Effect on Self-Esteem and Self-Efficacy**  
 Chloe Ann Levin, 18, Senior, School: Roslyn High School, Roslyn Heights, New York, T: Allyson Weseley
- BMED047 Application of Motion Interpolation Algorithms to a Kinect Sensor via Microsoft Visual Studio to Accurately Render At-Home Physical Therapy Exercises: A Low-Cost, Systems-Engineered Approach to Assist Stroke Rehabilitation Patients**  
 Anjali Maheshwari, 18, Senior, School: Half Hollow Hills High School West, Dix Hills, New York, T: Michael Lake
- BMED062 Hepatic Stellate Cell-Targeting Nanoparticles for Hepatocellular Carcinoma Chemoprevention**  
 Mohamed Ehab El-Abtah, 18, Senior, School: Syosset High School, Syosset, New York, T: Veronica Ade
- CBIO021 Computational Analysis of Intron Retention Events in Alternatively Spliced mRNA**  
 # Raymond Minor Huffman, 18, Senior, School: Manhasset High School, Manhasset, New York, T: Alison Huenger
- CELL023 Identification of TBX3 as a Novel Regulator of Lung Angiogenesis**  
 Michael Lai, 18, Senior, School: Jericho Senior High School, Jericho, New York, T: Serena McCalla
- CELL024 Circumventing Traditional Bottlenecks in Glioma Genetic Therapy: Ultra-pH Sensitive Nanodelivery Vehicles**  
 Marc Huo, 17, Junior, School: Jericho High School, Jericho, New York, T: Serena McCalla

- CHEM032** **Spin-Orbit Coupling Induced Heterogeneous Excited-State Dynamics of 6-Coordinate Transition Metal Protodyes**  
# Archana Verma, 18, Senior, School: Jericho High School, Jericho, New York, T: Serena McCalla
- EAEV044** **A Study of Westward Recurring Tropical Cyclone Tracks in the Atlantic**  
Abbigayle Emily Cuomo, 18, Senior, School: Commack High School, Commack, New York, T: Richard Kurtz
- EAEV045** **A Novel Method for Accurately Modeling Past Atmospheric Conditions Using Ice Core Data from Law Dome and WAIS Divide: An Approach to Monitor Future Climate Sustainability**  
Gilbert Granger Spencer, 17, Junior, School: Half Hollow Hills High School West, Dix Hills, New York, T: Michael Lake
- EBED017** **The Heat Free Car: Vehicular Heatstroke Prevention System (Second-Generation Prototype)**  
Scott Andrew Soifer, 17, Junior, School: North Shore Hebrew Academy High School, Great Neck, New York, T: Lisa Runco
- EGCH018** **A Paper-Based Microbial Fuel Cell for Glucose Monitoring in Saliva**  
Kendra Zhang, 17, Junior, School: Jericho High School, Jericho, New York, T: Serena McCalla
- EGCH022T** **Utilization of *Epigallocatechin gallate (EGCg)* as a *Shewanella putrefaciens* ATP Synthase Inhibitor to Maximize Microbial Fuel Cell Performance**  
Dahyun Park, 19, Senior, Jordan Brett Sanford, 18, Senior, School: Syosset High School, Syosset, New York, T: Veronica Ade
- ENBM038T** **The Influence of Metalized Graphene Oxide/Reduced Graphene Oxide and Sulfonated Polystyrene on Dental Pulp Stem Cell Differentiation and Protein Adsorption**  
Rachel Sara Sacks, 18, Senior, Gila Rachel Schein, 18, Senior, School: Hebrew Academy of the Five Towns and Rockaway, Cedarhurst, New York, T: Rebecca Isseroff
- MATH030** **Discrete Ricci Flow on Discrete 3-Manifolds**  
Anton Wu, 17, Senior, School: Half Hollow Hills High School East, Dix Hills, New York, T: Michael Lake
- MCRO034** **The Effects of Nitazoxanide on Chaperone/Usher Pathway Assembled Virulence Factors in Gram-Negative Bacteria**  
Raphael Leon Iskra, 17, Junior, School: Commack High School, Commack, New York, T: Richard Kurtz
- PHYS033** **Extra Radial Muon Orbit Distortion with E821 Beta Function**  
Rushabh Mehta, 18, Senior, School: Syosset Senior High School, Syosset, New York, T: Veronica Ade
- SOFT024** **Optimizing Supercomputer Topologies: Developing Probabilistic Algorithms to Construct More Efficient Node Networks to Increase Supercomputer Speed**  
Talia Miriam Blum, 18, Senior, School: Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York, T: Mary Lou O'Donnell
- TMED029T** **A Novel Model to Efficiently Embody Platelet Morphological Change**  
Rahul Chaudhry, 18, Senior, Sahil Chaudhry, 18, Senior, School: Syosset High School, Syosset, New York, T: Veronica Ade
- New York City, USNY03, New York City Science and Engineering Fair*
- BEHA048** **Social Segregation in NYC Public High Schools**  
Georja Agapi Fotiou, 18, Senior, School: Townsend Harris, Flushing, New York, T: Franco Scardino
- BEHA049** **The Effects of Mother-Infant Interactions on Infants' Ability to Transition from Crawling to Walking**  
Ryan Foo, 18, Senior, School: The Bronx High School of Science, Bronx, New York, T: Richard Lee
- CBIO032** **Towards Accurate Copy Number Calling in High Ploidy Tumors**  
Jessica Frank, 17, Junior, School: Riverdale Country School, Bronx, New York, T: Rachel Cox
- CELL044** **Elucidating the Roles of the REST C-Terminus and CoREST1 in Zebrafish Neural Development and Behavior**  
Karen Jiang, 18, Senior, School: Horace Mann School, Bronx, New York, T: Christine Leo

- EAEV068** **Mathematically Cutting to the Bone: Solving Analytical Problems in ESR Dating the Paleolithic Site at Isimila, Tanzania**  
Neeraj Sakhrani, 18, Senior, School: Bronx High School of Science, Bronx, New York, T: Bonnie Blackwell
- EAEV069** **A Novel Methodology for Co-Clustering Identification and Analysis for Endemic Plants with Applications to Conservation and Agricultural Planning**  
Gregory Shogo Gueorguiev, 18, Senior, School: Bronx High School of Science, Bronx, New York, T: Vladimir Shapovalov
- MATH043T** **A 6-Chromatic Unit Distance Graph in Space**  
Stephanie Li, 17, Junior, School: Horace Mann School, Bronx, New York, T: Christine Leo Thomas Lee, 16, Sophomore, School: Stuyvesant, New York, New York, T: Christine Leo
- MATH044** **n-Dimensional Fractions and a Generalized Calkin-Wilf Tree**  
Ajmain Yamin, 18, Senior, School: Bronx High School of Science, Bronx, New York, T: Melvyn Nathanson
- MATS048** **A Novel Methodology to Assemble Organic Nanomaterials via Magnetophoretic Alignment**  
Vera Alexandra Zarubin, 17, Junior, School: The Bronx High School of Science, Bronx, New York, T: Vladimir Shapovalov
- MCRO049** **Intra-Microcolony Spatial Positioning Affects Antibiotic Susceptibility in *Neisseria gonorrhoeae***  
Mahmoud Abouelkheir, 18, Senior, School: Midwood High School, Brooklyn, New York, T: Glenn Elert
- PLNT048** **Modeling the Spatio-Temporal Dynamics of Late Blight: Optimization, Validation, and Applications**  
Benjamin Firester, 18, Junior, School: Hunter College High School, New York, New York, T: Gilana Reiss
- ROBO033** **A Novel Multiparameter Optical Sensor Using CMOS Imaging and Remote Neural Networks for Microbial Analysis**  
Sharon Lin, 19, Senior, School: Stuyvesant High School, New York, New York, T: Jason Econome
- TMED045** **Designing and Testing a Novel Drug Targeting the Distinct Metabolic Roles of the Isoforms of PPARGamma**  
Dylan Li, 18, Senior, School: Hunter College High School, New York, New York, T: Gilana Reiss
- Westchester, USNY05, Regeneron-Westchester Science and Engineering Fair*
- BEHA019** **Maternal Behavior Contributing to Early Life Adversity and the Subsequent Neural and Behavioral Effects on Rat Pups**  
Hannah Louise Brown, 19, Senior, School: Dobbs Ferry High School, Dobbs Ferry, New York, T: Erica Curran
- BEHA025** **Lucid Dreaming: Its Electrophysiological Correlates and Induction through Multiple Awakenings**  
DeeAnn Guo, 18, Senior, School: John Jay High School, Cross River, New York, T: Linda Burke
- BEHA041T** **The Effect of Traumatic Brain Injury and Metformin on *Drosophila* Learning**  
Hannah Rose Bilton, 18, Junior, Emma Elizabeth Bilton, 18, Junior, School: Yorktown High School, Yorktown Heights, New York, T: Michael Blueglass
- BMED039T** **Evaluating Head Accelerations in Men's Varsity Lacrosse**  
David James Friedman, 18, Senior, School: Sleepy Hollow High School, Sleepy Hollow, New York, T: Michele Zielinski Jack Tygard Weitzner, 19, Senior, School: Sleepy Hollow High School, Sleepy Hollow, New York, T: Michele Zielinski
- BMED040** **The Effects of Sex and Type 2 Diabetes on Alzheimer's Disease Pathology in Tg6799 Mouse Hippocampi and Cortices**  
Sarah Anne Hoffman, 17, Junior, School: Ossining High School, Ossining, New York, T: Valerie Holmes
- CELL010** **The Mutagenesis of the PD-L1 Inhibitory Ligand to Identify the Binding Site of the Novel PD-L1/B7-1 Pathway**  
Alyssa Nicole Klee, 17, Junior, School: Somers High School, Lincolndale, New York, T: William Maelia

- CELL016** **Autism and Genetics: Understanding the Role of AUTS2 in the Pathology of Autism Spectrum Disorder**  
Katherine Anne Miles, 18, Senior, School: Sleepy Hollow High School, Sleepy Hollow, New York, T: Janet Longo-Abinanti
- CELL025** **Assessing the Efficacy of Pentachloropseudilin as an Inhibitor of Slow Adaptation in Hair Cells**  
Chinmai A. Deo, 18, Junior, School: Ossining High School, Ossining, New York, T: Valerie Holmes
- CELL026** **The Identification of Candidate NBA1 Interacting Proteins**  
Jeffrey Zhang Ma, 17, Junior, School: Edgemont High School, Scarsdale, New York, T: Maria DeCandia
- CELL037T** **Proliferation of Natural Killer Cells and the Anti-Inflammatory Cytokine Interleukin-4 in a Model of Infantile Spasms**  
Lior Raz-Farley, 18, Senior, Michelle Zhang, 18, Senior, School: Ossining High School, Ossining, New York, T: Valerie Holmes
- ENMC039** **LifeSpin: Comprehensive Water Purification and Transportation via Induced Turbulent Flow in Conjunction with Faraday's Law of Induction**  
Shane Tomaino, 17, Junior, School: Rye Country Day School, Rye, New York, T: Ryan Kopreski
- PHYS025** **Evaluation of Exoplanet Detection Methods: The Limits of Current Knowledge**  
Keon Azar, 17, Junior, School: Harrison High School, Harrison, New York, T: Allison Blunt
- PHYS034** **Swift XRT and UVOT Investigation of Low-Mass X-Ray Binary 1RXS J180408.9-342058**  
Audrey Saltzman, 18, Senior, School: Byram Hills High School, Armonk, New York, T: David Keith
- SOFT021** **Creating an Assistive Technology for People with Orthographic Dyslexia by Reducing the Orthography Depth of Internet Web Pages**  
Pranav G.R. Krish, 17, Junior, School: Yorktown High School, Yorktown Heights, New York, T: Michael Blueglass
- TMED023** **Transient Visual-Evoked Potentials as a Novel Biomarker for Autism and Phelan-McDermid Syndrome**  
Lauren Hallie Singer, 18, Senior, School: Scarsdale High School, Scarsdale, New York, T: Jeremy Szerlip
- Syracuse, USNY06, Central New York Science and Engineering Fair*
- BCHM025** **Behind the Cause: A Novel Role of a Natural Lipid Bilayer in Causing Alzheimer's Disease**  
Elise Nicole White, 17, Junior, School: Binghamton High School, Binghamton, New York, T: Carolyn Wilczynski
- BMED048** **Discovery of Highly-Correlated Circadian Oscillations in Oral MicroRNA and Microbiome Levels Using Next Generation Sequencing of Human Saliva: Implications for Human Health and Disease**  
Neil K. Khurana, 18, Junior, School: Fayetteville-Manlius High School, Manlius, New York, T: Frank Middleton
- MATS043** **Revolutionizing Engineering through Visible Light: The Safe and Cost-Effective Creation of Ultra-Light, Strong, and Easily Architected Materials**  
Hari Nanthakumar, 17, Junior, School: Christian Brothers Academy, Syracuse, New York, T: Christin Sommers
- Troy, USNY07, Greater Capital Region Science and Engineering Fair, Inc.*
- ENBM023** **Development of a Novel 3D Printed 2-Stage Hollow Fiber Filter to Reduce Pain on Injection of a Propofol Emulsion**  
Conor Collins, 19, Senior, School: Monroe Woodbury High School, Central Valley, New York, T: Jon Decker
- ENMC032** **The Development of an Unmanned Aerial Vehicle for Use in Silo Inspection**  
Samantha Boyea, 17, Junior, School: Greenwich Junior-Senior High School, Greenwich, New York, T: Nicole Dixon
- ROBO009** **Vision Based Robot Intelligence**  
Ved Kumar, 16, Sophomore, School: Guilderland High School, Guilderland, New York, T: Alicia McTiernan
- Utica, USNY08, Utica College Regional Science Fair*

- CHEM056**     **Shielding Versus Not Shielding Protecting Organic Solar Cells from UV Degradation**  
Herbert Dillian Fountain, 17, Sophomore, School: West Canada Valley Central High School, Newport, New York, T: William Chapman  
*Rochester, USNY09, Central Western Section-Science Teachers Association of New York State Science Congress*
- CHEM028**     **Characterizing a Cu/Mn Alloy for Extracting Oxygen from Inert Gas Streams**  
Grace Ann Lenhard, 18, Senior, School: Prattsburgh Central School, Prattsburgh, New York, T: Cody Clement  
*Buffalo, USNY11, Western New York Regional Science and Engineering Fair*
- CELL035**     **Dimerization Domain of SSRP1 as a Dominant Negative FACT Inhibitor**  
Thierry Juang, 17, Junior, School: City Honors School, Buffalo, New York, T: Todd Richards  
*Potsdam, USNY13, Terra North East Regional Science and Engineering Fair*
- ROBO012T**     **FRUIT: Food Retrieval Utilizing Intelligent Technology**  
Bradley David Neureuther, 17, Sophomore, Liam Ray Sayward, 17, Junior, Justin Matthew Bokus, 17, Junior, Schools: Home School, West Chazy, Home School, Schuylers Falls, Hilltop Homeschool, Plattsburgh, New York, T: Tammy Neureuther, Melissa Sayward  
*Queens, USNY50, New York State Science and Engineering Fair*
- BEHA051**     **Computational Modeling of Neuronal Networks: Clarifying Neural Dynamics for Neuropathological Investigations**  
Zhitong Wang, 18, Senior, School: Jericho Senior High School, Jericho, New York, T: Serena McCalla
- BMED056T**     **Osteochondral Tidemark Region Synthesis: Application of Siglec-15 Overexpression and Novel Seeded Hydrogel**  
Farah Tiffany Rexha, 17, Junior, Irene Antony, 17, Junior, Schools: Jericho High School, Jericho, Half Hollow Hills High School West, Dix Hills, New York, T: Serena McCalla, Michael Lake
- BMED065**     **Cell-Based Delivery of Gene-Silencing Products via Gap Junction Channels**  
Erika Emily Nemeth, 18, Senior, School: Smithtown High School East, St. James, New York, T: Maria Zeitlin
- CELL048**     **Lecithin-Retinol Acyl Transferase in Squamous Cell Carcinoma: The Relationship Oncology and Wound Repair**  
Emily Ann Peterson, 18, Senior, School: Smithtown High School East, St. James, New York, T: Maria Zeitlin
- EBED041**     **Using Inertial Navigation Systems (INS) and the Kalman Filter in Order to Create a Reliable Navigation Aid for the Blind**  
Isabelle Paris Chong, 18, Senior, School: Byram Hills High School, Armonk, New York, T: David Keith
- ENBM064**     **Manipulating Matter on the Nanoscale: Incorporated Branched Junction Inside a DNA Tensegrity Triangle**  
Mutahara Nurit Bhuiyan, 17, Junior, School: Jericho Senior High School, Jericho, New York, T: Serena McCalla
- ENEV047T**     **The Development of a Mechanized Approach to Rapidly and Sensitive Detect and Purify Water Contaminated with Shigella, E. coli, Salmonella, and Cholera through the Use of Carbon-Based Biosensors in Conjunction with Arduino-Controlled Micropipettes**  
Rachel Chang, 17, Junior, Ryan Matthew Thorpe, 17, Junior, School: Manhasset High School, Manhasset, New York, T: Alison Huenger
- MATS049**     **Multifunctional NGF-Au-SPIO Nanoparticles: Magnetically Directing Neurite Extension and Orientation**  
Grace Hu, 18, Senior, School: Jericho High School, Jericho, New York, T: Serena McCalla
- MATS058**     **Growth of Monolayer MoSe<sub>2</sub> and WSe<sub>2</sub> with the Assistance of Halide Catalysts**  
Kristian Ming Nilsen, 18, Senior, School: Oceanside High School, Oceanside, New York, T: Heather Hall
- MCRO054**     **Biochemical and Structural Study of the Escherichia coli Transcription Elongation Complex with Lambda-N and HK022 Nun**  
Joel Lima, 18, Senior, School: Elmont Memorial Junior-Senior High School, Elmont, New York, T: Michelle Flannory

- SOFT042** **MFT: Improving Convolutional Object Tracking with Feed Separated Learning**  
 # Michael Yoomin Lee, 19, Senior, School: Manhasset High School, Manhasset, New York, T: Alison Huenger
- TMED042** **The Structural, Mechanistic, and Clinical Applications of NT5C2 in Drug Resistance and Relapse of T-ALL**  
 Sarah Marie Romanelli, 18, Senior, School: Oceanside High School, Oceanside, New York, T: Heather Hall
- TMED043** **The Effect of Nutrient Levels on Chemotherapeutic Drug Efficacy in NCI-H460, Non-Small Cell Lung Carcinoma Cells**  
 Jillian Rose Pesce, 18, Senior, School: Smithtown High School East, St. James, New York, T: Maria Zeitlin
- TMED044** **Potent Treatment of Renal Fibrosis: A Novel Inhibitor of HIPK2-Smad3 Interaction**  
 Ruiwen Fu, 19, Senior, School: Jericho Senior High School, Jericho, New York, T: Serena McCalla

## NORTH CAROLINA

*Charlotte, USNC01, Charlotte-Mecklenburg Regional Science Fair*

- BMED011** **Environmental and Dietary Interventions in the Pathogenesis of Rheumatoid Arthritis**  
 Aarushi Patil, 16, Sophomore, School: Cox Mill High School, Concord, North Carolina, T: Jessica Enlow
- PHYS024T** **Muon Scattering Tomography: Utilizing Silicon Photomultiplier Arrays to Trilaterate Muon Multiple Coulomb Scattering Events**  
 Trevor Daino, 18, Senior, Michael Kronovet, 19, Senior, Arpad Attila Voros, 18, Senior, School: Marvin Ridge High School, Waxhaw, North Carolina, T: Faramarz Farahi
- Durham, USNC02, North Carolina Central Region III Science Fair*
- SOFT001** **Applying Machine Learning to WiFi Channel State Information for Smart, Safe, Energy Saving Buildings**  
 # Emily Jamie Wang, 16, Sophomore, School: William G. Enloe High School, Raleigh, North Carolina, T: Debra Richards
- Durham, USNC03, North Carolina Science Fair Region 3B*
- CBIO036** **Investigation of Phytoestrogens as Treatments for Estrogen Receptor-Negative Breast Cancer**  
 Anna Margaret Clyburn, 18, Senior, School: North Carolina School of Science and Mathematics, Durham, North Carolina, T: Michael Bruno
- MCRO047** **Drastic Conditions Call for Drastic Measures: The Viability of Terrestrial Extremophiles in Simulated Martian UV Radiation**  
 Ana Sofia Mendez Uzsoy, 18, Senior, School: North Carolina School of Science and Mathematics, Durham, North Carolina, T: Amy Sheck
- Raleigh, USNC50, North Carolina State Science Fair*
- ANIMO47T** **Olfactometer Assays to Measure the Response of *Culex quinquefasciatus* to Plant and Fungal Volatiles**  
 Emma Nicole Dauster, 16, Sophomore, Kylie M. Evans, 16, Sophomore, Cullen Stuart Duval, 16, Sophomore, School: Brevard Senior High School, Brevard, North Carolina, T: Jennifer Williams
- BEHA038T** **Correlation between Personality Type and Test Performance**  
 Dannis Rubio Cazarez, 18, Junior, Courtland Stanley Hardy, 18, Junior, School: Surry Early College High School of Design, Dobson, North Carolina, T: Robin Narehood
- CHEM037** **An "Organic" Organic Project: The Design of a Sustainable, Cost-Efficient, Multistep Project Beginning with the Teaberry Plant Utilizing the Fundamental Techniques of Organic Chemistry to Synthesize Aspirin**  
 Jessica Marie Frost, 18, Senior, School: Surry Early College High School of Design, Dobson, North Carolina, T: Robin O'Rourke
- CHEM039T** **Carbon Dioxide Dry Reforming Over Novel Pt Catalyst Created Using Unconventional Fabrication Method**  
 Sahil Gupta, 18, Senior, Michelle A. Gan, 17, Junior, Schools: School: North Carolina School of Science and Mathematics, Durham, North Carolina, William

- EGPH020T** G. Enloe High School, Raleigh, North Carolina, T: Sarah Shoemaker  
**Solar-Powered Optics: Insight into a Renewable Energy Resource**  
 Giovanni Riyanto Budi, 18, Senior, School: Isaac Bear Early College High School, Wilmington, North Carolina, Andrea Lamas-Nino, 18, Senior, School: Isaac Bear Early College High School, Wilmington, North Carolina, T: Michael Kelly
- ENEV045** **The Effects of *Brassica juncea* vs. *Eichhornia crassipes* on the Reduction of CrVI to CrIII through Phytoremediation**  
 # Sara E. Zangi, 16, Sophomore, School: East Chapel Hill High School, Chapel Hill, North Carolina, T: Robert Patterson
- ENMC069** **Engineering a Laser Technique to 3D Print Robust Hydrogels for Extracellular Matrices**  
 # Joshua Dong, 18, Senior, School: North Carolina School of Science and Mathematics, Durham, North Carolina, T: German Parada
- MATS063T** **Mathematical Characterization of Improved Efficiency of Solar Energy Collection Based on Quantum Biology**  
 Daniel Joseph Haller, 17, Junior, School: Marvin Ridge High School, Waxhaw, North Carolina, T: Steve Wilson  
 Ashwin Kulshrestha, 18, Junior, Jainith Jagdish Patel, 18, Junior, School: Marvin Ridge High School, Waxhaw, North Carolina, T: Steven Wilson
- PLNT054T** **Pollen Count and Analysis of Store Honey and NC Honey Samples for Content and Purity**  
 Elizabeth Madison Rogers, 18, Senior, Larry Lee McCallum, 16, Sophomore, Swathi Gadipudi, 18, Junior, Schools: Cumberland International Early College High School, Fayetteville, North Carolina, Lumberton High School, Lumberton, North Carolina, Terry Sanford High School, Fayetteville, North Carolina, T: Rita Hagevik
- SOFT028** **AzureWare: A Novel Approach for Quantifying Tremors and Progression of Parkinson's Disease through an Android App and Bluetooth Low Energy Technology**  
 Koushik Sridhar, 16, Freshman, School: Ardrey Kell High School, Charlotte, North Carolina, T: Alicia Morrissey
- SOFT029** **Applications of Statistical Machine Learning Algorithms in the Kidney Exchange**  
 Kireet Venkata Panuganti, 18, Senior, School: North Carolina School of Science and Mathematics, Durham, North Carolina, T: Jonathan Bennett
- TMED039** **The Effects of Electrical Discharge Plasma Treatment on Cellular Growth and Wound Healing**  
 # Nathan Leonard Kinsey, 18, Junior, School: Eugene Ashley High School, Wilmington, North Carolina, T: Gwendolyn Abraham
- NORTH DAKOTA**  
*Bismarck, USND01, Southwest Central North Dakota Regional Science and Engineering Fair*
- ANIM060** **Effects of P.G. 600 and CIDRs on the Ewe's Conception Rate**  
 Abbigale Elaine Steeke, 17, Sophomore, School: Scranton Public School, Scranton, North Dakota, T: Gretchen Flatz
- PLNT031** **Effects of North Dakota Road Dust on *A. thaliana*: An Assay of Chlorophyll and Ascorbate Peroxidase**  
 Monica Rose Zent, 18, Senior, School: Dickinson High School, Dickinson, North Dakota, T: Elisa Kensingner
- Fargo, USND03, Southeast North Dakota Regional Science and Engineering Fair*
- MCRO033** **The Effects of Household Remedies on Mold**  
 Dylan Benjamin Benson, 17, Sophomore, School: Hankinson Public School, Hankinson, North Dakota, T: Patty Kratcha
- Jamestown, USND04, Southeast Central North Dakota Science and Engineering Fair*
- EGPH019** **Wind Energy: The Power of Pulleys**  
 Tanner John Kempf, 17, Sophomore, School: Ashley Public School, Ashley, North Dakota, T: Lucas Moldenhauer
- PLNT032** **Does Water pH Affect Plant Growth?**  
 Addie James Schnabel, 18, Junior, School: Ashley Public School, Ashley, North Dakota, T: Lucas Moldenhauer
- Grand Forks, USND05, Northeast North Dakota Regional Science and Engineering Fair*



- MATH034 Benford's Law vs. the Boom: A Statistical Analysis of North Dakota Population from 1980 to 2015**  
# Wesley R. Kemp, 18, Junior, School: Cavalier Public School, Cavalier, North Dakota, T: LuAnn Kemp  
*Williston, USND06, Northwest North Dakota Regional Science Fair*
- ANIM038 No, Not the Trailer!**  
Abigail Grace Larson, 17, Junior, School: Tioga High School, Tioga, North Dakota, T: Debra Moe
- EAEV074 Nanosilver: Biohazard or Breakthrough**  
B Ryan Martinez, 16, Freshman, School: Trenton High School, Trenton, North Dakota, T: Robert Turcotte
- ENMC056 Silent Sounds**  
Andra Moira Catherine Smith, 15, Freshman, School: Trinity Christian School, Williston, North Dakota, T: Traci Shirk  
*Grand Forks, USND50, North Dakota State Science and Engineering Fair*
- EGPH038 Waste Heat Recovery to Reduce Engine Emissions**  
# Eric John Spilman, 18, Senior, School: Mandan High School, Mandan, North Dakota, T: Ciera Kroh
- ENBM066 Engineering a Device to Improve Vision via Photoactivation**  
Isabelle Louise Chambers, 15, Freshman, School: Woodhaven Academy, Fargo, North Dakota, T: Carrie Leopold
- MCRO044 A Quantitative Analysis of the Presence and Absence of a Variety of Mold Groups**  
# Josianna Mabel Prochnow, 17, Junior, School: Hankinson Public School, Hankinson, North Dakota, T: Patty Kratcha
- OHIO**  
*Athens, USOH01, Southeastern Ohio Regional Science and Engineering Fair*
- ENMC033 Effectiveness of Negative Stiffness Devices at Resisting Seismic Force in Buildings**  
Derek Christopher DeMel, 18, Senior, School: Athens High School, The Plains, Ohio, T: Andrea Anderson  
*Cleveland, USOH02, Northeastern Ohio Science and Engineering Fair*
- CHEM022 Novel Column Designs for Improved Bioseparation of Complex Molecules Using Counter Current Chromatography**  
# Dhweeja Dasarathy, 18, Senior, School: Hawken School, Gates Mills, Ohio, T: Robert Shurtz
- ENBM021 A Novel High-Efficiency System for Infant Warming through Secondary Heating Mechanisms**  
## Swathi Ravi Srinivasan, 18, Senior, School: Beachwood High School, Beachwood, Ohio, T: Michael Lerner
- ENBM028 Mosquito-Inspired Insertion Guide Prevents Flexible Intracortical Microelectrodes from Buckling During Implantation**  
Suraj Sai Srinivasan, 17, Junior, School: Strongsville High School, Strongsville, Ohio, T: Gail DiGioia
- ENMC022 Reduction of Cranial Impact from High-Speed Lacrosse Shots Utilizing Multi-Durometer, External Helmet Padding: A "Deflection" Design**  
Maximilian James Chmura, 16, Sophomore, School: St. Vincent - St. Mary High School, Akron, Ohio, T: Joanna Price
- SOFT016 MATCHLESS: A Linear Algebraic Approach to Duplicate File Identification**  
## Michael William Litt, 18, Senior, School: Orange High School, Pepper Pike, Ohio, T: Jonathan Litt  
*Dayton, USOH04, Montgomery County Science and Engineering Fair*
- BMED027 The Effects of Bromelain on Coagulated Blood**  
Jeremiah David Penick, 17, Junior, School: Brookville High School, Brookville, Ohio, T: Anna Porter
- EBED020 SafeSeat**  
Andrew Barbaro, 18, Junior, School: Carroll High School, Dayton, Ohio, T: Laurie Fuhr
- EGPH009 Increased Tidal Barrage Energy Output through Pumping**

- # Peter Joseph Menart, 17, Junior, School: Carroll High School, Dayton, Ohio, T: Laurie Fuhr
- Shaker Heights, USOH05, Hathaway Brown Upper School Fair*
- BMED030** **Prevalence of *Plasmodium falciparum* Gametocytes in Asymptomatic Malaria Patients**  
Ananya Kalahasti, 18, Senior, School: Hathaway Brown School, Shaker Heights, Ohio, T: Crystal Miller
- MATS024** **Investigating the Design of Nanoparticles to Target Difficult-to-Reach Tumors**  
Isha Lele, 17, Junior, School: Hathaway Brown School, Shaker Heights, Ohio, T: Crystal Miller
- MATS027** **Heteromultivalent Approaches to Clot-Targeted Nanomedicine: Combination Targeting of Platelets and Fibrin**  
Amaya Najma Razmi, 17, Junior, School: Hathaway Brown School, Shaker Heights, Ohio, T: Crystal Miller
- PHYS016** **Surface vs. Bulk Chiral Orientation Effects in Liquid Crystals**  
Catherine Leigh Areklett, 18, Senior, School: Hathaway Brown School, Shaker Heights, Ohio, T: Crystal Miller
- Archbold, USOH06, Northwest Ohio Science and Engineering Fair*
- ANIM015** **High Fructose Corn Syrup and Sucrose: Effects on *Mus musculus* Physiology**  
Cade Ray McGarvey, 18, Junior, School: Paulding High School, Paulding, Ohio, T: LeeAnn Favorito
- MCRO013** **The Effectiveness of Oregano Oil in Treating *Ostertagia ostertagi***  
Gretchen M. Lee, 17, Junior, School: Pettisville High School, Pettisville, Ohio, T: Donna Meller
- Marion, USOH07, Marion Area Science and Engineering Fair*
- ENMC060** **Enhancing Accessible Pedestrian Signals: Using Tactile Maps**  
Mary Grace Murray, 17, Sophomore, School: Olentangy High School, Lewis Center, Ohio, T: Benjamin Lloyd
- PHYS047** **A Novel Spectroscopic-Chemical Sensor Using Photonic Crystals**
- # Sulekh Frederic Fernando-Peiris, 17, Junior, School: Mount Vernon High School, Mount Vernon, Ohio, T: Scott Patterson
- Upper Arlington, USOH09, Central Ohio Regional Science and Engineering Fair*
- BMED028** **Identifying Natural Compounds and Genes that Will Protect from UV Radiation**  
Aniv Ray, 16, Freshman, School: Columbus Academy, Gahanna, Ohio, T: Joel Davis
- ENEV021T** **Investigation of the Pyrolysis and Chemical Activation of Expanded Polystyrene Foam to Form Activated Carbon**  
Ashton Cameron Cofer, 15, Freshman, School: Columbus Academy, Gahanna, Ohio, Julia Nicole Bray, 16, Freshman, School: Gahanna Lincoln High School, Gahanna, Ohio, T: Joe Reczek
- ROBO010** **Mars Habitation Constructor: An Autonomous Device Capable of Printing Structures on the Surface of Mars Using Native Materials**  
Cole J. Tucker, 17, Junior, School: Thomas Worthington High School, Worthington, Ohio, T: Sara Quart
- Columbus, USOH11, Buckeye Science and Engineering Fair*
- EGCH036T** **The Feasibility of Using Bamboo as a Source of Ethanol for Fuel**  
Ben Peter Charnay, 18, Senior, Aaron Charnay, 18, Senior, School: Sycamore High School, Cincinnati, Ohio, T: Beth Quinones
- EGPH031** **Developing a Novel Aeroelastic Flutter Based Piezoelectric Energy Harvester (AERO)**  
Maanasa Mendu, 15, Freshman, School: William Mason High School, Mason, Ohio, T: Karen Young
- ENBM065** **Engineering and Evaluation of 3D Printed Polymer Scaffolds for Bone Tissue Regeneration**  
Nipun Udara Jayatissa, 16, Sophomore, School: Maumee Valley Country Day School, Toledo, Ohio, T: Brian Oliver

**OKLAHOMA***Alva, USOK01, Northwestern Oklahoma State University Regional Science Fair***BMED075 Identification of Remains**

Kennith James Goddard, 20, Senior, School: Fairview High School, Fairview, Oklahoma, T: Shawn Cusack

*Bartlesville, USOK02, Bartlesville District Science Fair***ANIM016 Predicting Pulsations: A Comprehensive Study to Determine the Effect of Grouping Patterns on *Cassiopea xamachana***

# Allison Biddinger, 18, Junior, School: Bartlesville High School, Bartlesville, Oklahoma, T: Betty Henderson

**BEHA026 Ink for Girls, Blue for Boys**

Madelynn Shambles, 14, Freshman, School: Bartlesville High School, Bartlesville, Oklahoma, T: Cheryl Fentress

**PLNT011 Better with Bacteria: The Effects of Bacteria on *Chlorella vulgaris***

## James Bryan Martinez, 17, Junior, School: Bartlesville High School, Bartlesville, Oklahoma, T: Gary Layman

*Miami, USOK04, Northeastern Oklahoma A&M Science and Engineering Fair***EAEV021 Taking the Pulse of Tar Creek: A Lab and Field Study of Macroinvertebrates in Tar Creek Coupled with a Heavy Metal Water Analysis**

Macey Middleton, 18, Senior, School: Grove High School, Grove, Oklahoma, T: Keliana Steen

*Muskogee, USOK05, Muskogee Regional Science and Engineering Fair***ENMC040 Building a Better Burner Improving Forge Efficiency**

Brendan Joseph Crotty, 15, Freshman, School: Home School, Muskogee, Oklahoma, T: Jennifer Crotty

*Ada, USOK07, East Central Oklahoma Regional Science and Engineering Fair***EAEV077 Natural Attenuation of Titanium Dioxide (TiO<sub>2</sub>) Nanoparticles Photo-Catalysis-Phase II, Marine Systems**

# Rayna Shianne Ellison, 18, Junior, School: Latta High School, Ada, Oklahoma, T: Scott Huling

*Wilburton, USOK09, Eastern Oklahoma Regional Science and Engineering Fair***MCRO014 Identification, Pharmacological Screening, and Antiviral Mechanistic Determination of Fractions and Compounds Isolated from *Chondrus crispus* and *Laminaria digitata* Extracts**

### Beau Taylor Bingham, 18, Senior, School: Cascia Hall Preparatory School, Tulsa, Oklahoma, T: Sally Fenska

*Ada, USOK50, Oklahoma State Science and Engineering Fair***ANIM063 Evaluating the Effects of Probiotics on Neurology in the Model Organism *Drosophila melanogaster* Adult Flies and Third Stage Instar Larvae Utilizing Environmental Stressors and Behavioral Assays**

# Erika Eleonora Ravitch, 17, Junior, School: Cascia Hall Preparatory School, Tulsa, Oklahoma, T: Sally Fenska

**ENMC064 Iced Up Lowdown: Examining the Degrading Effects of Ice on Laminar Flow and Performance of Airfoils**

Elizabeth Grace Kent, 16, Sophomore, School: Kent Academy, Edmond, Oklahoma, T: Greg Kent

Oregon

*Gresham, USOR01, Gresham-Barlow Science Expo***CHEM042 Solution Grown and Tunable Plastic Magnets: Room Temperature Ferromagnetism in Mesoscopic Conjugated Polymer Rings**

## Arnob Das, 18, Junior, School: Jesuit High School, Portland, Oregon, T: Lara Shamieh

**EAEV037 Evaluating the Effectiveness of Lichen as Bioindicators**

Isaac Taylor Quinn Klementis, 18, Junior, School: Gresham High School, Gresham, Oregon, T: Julie Trisel

**ENEV035 Addressing Global Water Scarcity: Novel Dewatering Techniques for Hydrophilic Saponified Starch-Grafted-Polyacrylamide Hydrogel Based Desalination Using UV Light, Ca(OH)<sub>2</sub>, and Dry Ice to Improve Reusability of Super-Absorbent Polymers**

- ## Chaitanya Dasharathi Karamchedu, 18, Senior, School: Jesuit High School, Portland, Oregon, T: Lara Shamieh  
*Portland, USOR02, Portland Public Schools Science Expo*  
**EAEV039 Modeling the Effects of Land Use Change on Flooding in Pacific Northwest Streams to Promote Green Practices**
- ## Adam C. Nayak, 17, Junior, School: Cleveland High School, Portland, Oregon, T: Ronda Royal  
**MATH023 Independence of the Miller-Rabin and Lucas Probable Prime Tests**  
 Alec Maxwell Leng, 18, Senior, School: Lincoln High School, Portland, Oregon, T: Angie McVay  
*Hillsboro, USOR04, Beaverton-Hillsboro Science Expo*  
**CBIO010 A Novel Pan-Cancer Approach to Quantify Tumor Mutational Burden and Clinical Data Predictors for Immunotherapy Response towards Personalized Medicine**
- ## Aditya Jain, 17, Senior, School: Westview High School, Portland, Oregon, T: Debbie Cooper  
**EGCH003 A Durable, Portable and Biodegradable Microbial Fuel Cell that Utilizes a Native Plant Based AC Electrode and Optimized Sizing**  
 Rohan Mahesh Wagh, 15, Freshman, School: Sunset High School, Portland, Oregon, T: Korin Riske  
**ENMC016 Designing and Implementing an Algorithm to Accurately Control the Attitude of Free-Floating Satellites Using Extendable Manipulators**
- # Ashwin Nivas Datta, 19, Senior, School: Glencoe High School, Hillsboro, Oregon, T: Chris Steiner  
**SOFT050 Mobile Real-Time OCR for Visually Impaired Individuals**  
 Divya Amirtharaj, 16, Sophomore, School: Westview High School, Portland, Oregon, T: Debbie Cooper  
*Portland, USOR05, Aardvark Science Exposition*  
**BCHM012 Aptamer Based Disruption of the CD47-SIRP $\alpha$  Interface for Anticancer Applications**
- # Pushkar Shinde, 17, Junior, School: Oregon Episcopal School, Portland, Oregon, T: Bettina Gregg  
**BEHA010 The Effect of Paper, Electronic, and Audio-Electronic Reading Modalities on Reading Comprehension in Adults Aged 60 and Above**  
 Alison Thomas, 17, Sophomore, School: Oregon Episcopal School, Portland, Oregon, T: Bevin Daglen  
**EAEV007 Detection and Removal of Dinotefuran from the Environment: A Multi-Year HPLC-MS Analysis**  
 Raley Schweinfurth, 18, Junior, School: Oregon Episcopal School, Portland, Oregon, T: Bettina Gregg  
**EGPH004 Novel Fabrication of Thin Film Luminescent Solar Concentrators**  
 Bryan Hoo Hao Chun, 19, Senior, School: Oregon Episcopal School, Portland, Oregon, T: Bevin Daglen  
**ROBO017 UAV Obstacle Avoidance and Collision Prevention System**  
 Ryan Westcott, 16, Freshman, School: Oregon Episcopal School, Portland, Oregon, T: Owen Gross  
*Wilsonville, USOR06, CREST-Jane Goodall Science Symposium*  
**BEHA011 The Moral Sentence; Is It Right to Penalize People of Generalized Social Classes by a Crowd-Sourced Judging of Peers?**  
 Jareth Christopher Anderson, 18, Senior, School: Wilsonville High School, Wilsonville, Oregon, T: Don Ekman  
**EBED006 Safe with Me Now: A Novel System to Prevent Vehicular Hyperthermia in Children**  
 Jessica Mengxin Yu, 16, Sophomore, School: West Linn High School, West Linn, Oregon, T: Amy Schauer  
**ENBM056 A Path to Improving Gene Therapies for Liver-Related Diseases and Cancers through Selectable CRISPR-Cas9 Vectors**
- ## Daniel Tang, 18, Senior, School: West Linn High School, West Linn, Oregon, T: Amy Schauer

- PLNT023T** **Revolution of Self-Fertilizing Crops: Novel Transformation of IFS1 and IFS2 Genes Using Binary Vector for the Stimulation of a Symbiotic Bond Between *B. japonicum* and Host Plant**  
Kristopher Wieland, 19, Senior, School: Wilsonville High School, Wilsonville, Oregon, T: Amy Schauer Jared Wieland, 15, Freshman, School: Wilsonville High School, Wilsonville, Oregon, T: Amy Schauer  
*Eugene, USOR07, Central Western Oregon Science Expo*
- BMED041** **Novel Method of Identifying and Confirming Candidate Genes Causing Resistance to Acute Myeloid Leukemia using CRISPR Cas9**  
Megha Nitin Joshi, 16, Sophomore, School: South Salem High School, Salem, Oregon, T: Kenneth Miller
- MATH028** **Novel Application of Collatz-like Sequences to Cryptographically Secure Pseudo-Random Number Generation**  
James Chen, 17, Senior, School: West Salem High School, Salem, Oregon, T: Michael Lampert  
*Bend, USOR08, Central Oregon Community College Regional Science Expo*
- TMED010** **Optimizing Bioavailable Iron in Water**  
James Paul Verheyden, 17, Junior, School: Cascades Academy, Bend, Oregon, T: David Bermudez  
*Portland, USOR50, Intel Northwest Science Expo*
- CELL055** **Influence of Sub-Cellular Protein Localization on Cellular Growth Rate**  
Arjun Raghav Somayazulu, 17, Junior, School: Westview High School, Portland, Oregon, T: Debbie Cooper
- EAEV086** **Radiochemistry and AI: Development of an Analytical Capability Using Machine Learning Algorithms for Early Detection of Radionuclides in the Environment**  
Anushka M. Nair, 17, Sophomore, School: Lake Oswego High School, Lake Oswego, Oregon, T: Keith Grosse
- ENEV081** **Single Chamber MFC: Filtration of Arsenic with an Exoelectrogenic Biofilm**  
Nathan Michael Tidball, 16, Sophomore, School: Wilsonville High School, Wilsonville, Oregon, T: Amy Schauer
- MATH054** **A Geometrical Analysis of Harmony and Voice Leading in Music Using Quotient Orbifolds**  
Aditya Sivakumar, 17, Junior, School: Beaverton High School, Beaverton, Oregon, T: Mark Geren
- MATS079** **Carbon Fiber Chain Mail Protective Armor**  
Carson Wayne Weidman, 18, Senior, School: West Salem High School, Salem, Oregon, T: Michael Lampert
- MCRO067** **Rescue of Nucleotide DNA Repair Deficiencies to UVB and Solar-Simulated Irradiation by Pyrimidine Dimer Glycosylases and UV Endonucleases**  
# Stuti Paavani Garg, 17, Junior, School: Westview High School, Portland, Oregon, T: Debbie Cooper

## PENNSYLVANIA

*Harrisburg, USPA01, Capital Area Science and Engineering Fair*

- ANIM059** **Determining the Presence of Wolbachia in the Speyeria Genus: A Model for Examining Endangered Populations through a Related Species at Fort Indiantown Gap Military Reservation**  
Kaitlyn Marie Galliher, 19, Senior, School: Susquenita High School, Duncannon, Pennsylvania, T: Kathleen Becker
- CBIO049** **A Computational Model for Studying Cancer: Detecting Immediate Drivers for Malignant Tumor Progression**  
Michael Miller, 19, Senior, School: Hershey High School, Hershey, Pennsylvania, T: Jason Sibbach
- ENBM073** **Developing a Cost Effective 3D Printed Hand with Speech Recognition**  
# Alan Wei Hwang, 18, Senior, School: Hershey High School, Hershey, Pennsylvania, T: Jason Ambler  
*Lancaster, USPA02, North Museum Science and Engineering Fair*
- CHEM033** **Gold Nanoparticles as a Colorimetric Sensor for *Escherichia coli***  
Aparna Paul, 18, Senior, School: Elizabethtown Area High School, Elizabethtown, Pennsylvania, T: Theresa Swenson

- PLNT062** **Amplifying DNA Sequences Representative of Genetically Modified Products Using the Polymerase Chain Reaction**  
Gaurav Mittal, 15, Freshman, School: Manheim Township High School, Lancaster, Pennsylvania, T: Jonathon Coren  
*Philadelphia, USPA03, Delaware Valley Science Fairs*
- BCHM028** **Utilization of CRISPR/Cas9 to Knock Down Inflammatory and Angiogenic MicroRNAs in Endothelial Cells**  
#  
Julienne Chaqour, 17, Sophomore, School: High Technology High School, Lincroft, New Jersey, T: Michael Roche
- CBIO038** **SiteKey: A Novel Binding Site Predictor for Ordered Proteins Interacting with Intrinsically Disordered Proteins**  
Sagar Maheshwari, 19, Senior, School: Unionville High School, Kennet Square, Pennsylvania, T: Sandra Litvin
- CHEM057** **Effects of Sulfate Attack on Local Atomic Structure of Alkali-Activated Slag Cement**  
Maya Ravichandran, 17, Senior, School: High Technology High School, Lincroft, New Jersey, T: Michael Roche
- EBED042** **Assembly of a Novel CO<sub>2</sub> Based Heat Zone Design to Optimize Absorption during Optic Fiber Processing**  
Eric He, 17, Junior, School: High Technology High School, Lincroft, New Jersey, T: Michael Roche
- EGPH032** **"Virtually Perfect" Photovoltaic Cells: A Novel and Adaptive Approach to Modeling Quantum Dot Templates Optimized for Varied Light Conditions**  
Sathya Edamadaka, 16, Sophomore, School: High Technology High School, Lincroft, New Jersey, T: Michael Roche
- EGPH035** **Developing an Optimal Novel Unconventional Wind Turbine**  
Farid Muddassir Shahid, 16, Freshman, School: Parkland High School, Allentown, Pennsylvania, T: Christopher Gahman
- ENBM068** **Refining a Novel Device to Decrease the Risk of Vesicovaginal and Rectovaginal Fistulae during Labor**  
#  
Lori Liu Zhang, 17, Junior, School: High Technology High School, Lincroft, New Jersey, T: Michael Roche
- ENBM078T** **Neo-Sole Accelerometer-Based Remote Communications Fall Detection Device**  
Jake Evan Brooks, 16, Freshman, Saurabh Dhaval Shah, 16, Sophomore, School: Cherry Hill High School East, Cherry Hill, New Jersey, T: Aileen Constans
- MATH048** **The Homotopy Theory of Parametrized Objects**  
#  
Karthik Yegnesh, 17, Junior, School: Methacton High School, Eagleville, Pennsylvania, T: Robert Helm
- MCRO056** **The Host Range Specificity of Bacteriophage T4r**  
Judy Tianhong Zhong, 16, Sophomore, School: Upper Dublin High School, Fort Washington, Pennsylvania, T: Joanne Lilliendahl
- SOFT056** **Scin: An Application to Detect and Diagnose Plant and Skin Diseases Utilizing a Feed Forward Convolutional Neural Network**  
Neil Deshmukh, 15, Freshman, School: Moravian Academy, Bethlehem, Pennsylvania, T: Gaby Dee
- TMED048** **Harnessing Anti-Inflammatory and Immunomodulatory Potentials from Nature for Cancer Therapy**  
Claire Tse, 15, Freshman, School: Methacon High School, Eagleville, Pennsylvania, T: Kyung Lee
- TMED056** **Immunotherapy for Multiple Myeloma Cell Lysis**  
Sanjna Suhas Shelukar, 18, Senior, School: Wissahickon High School, Ambler, Pennsylvania, T: Christine Brandt  
*Pittsburgh, USPA04, Covestro Pittsburgh Regional Science & Engineering Fair*
- CBIO035** **Discovery of Novel Genes Linked to Breast Cancer Progression Using a Bayesian Framework**  
Shania Khatri, 17, Junior, School: Fox Chapel Area High School, Pittsburgh,

- Pennsylvania, T: Gregory Schubert
- CBIO048** **Fusion Genes as Drivers of Breast Metastasis**  
Jahnik Kurukulasuriya, 19, Senior, School: Pittsburgh Allderdice High School, Pittsburgh, Pennsylvania, T: Janet Waldeck
- ENBM061T** **SticKey Communication Made Easier!**  
Emily Suzanne Richard, 18, Junior, Connor Ehrgood, 17, Junior, School: Fort Cherry Jr./Sr. High School, McDonald, Pennsylvania, T: Jacqueline Newman
- Reading, USPA05, Reading and Berks Science and Engineering Fair
- MATS028** **Bioactive Glass Enhances Recovery of *Drosophila* and Sf9 Cell Mitochondrial Function Following Antibiotic Treatment**  
Lacie Elizabeth Pichler, 18, Junior, School: Conrad Weiser High School, Robesonia, Pennsylvania, T: Adelle Schade
- MCRO025** **Bacteria Hysteria: The Antibacterial Activity of Ginger**  
Baotram Vu Nguyen, 18, Senior, School: Berks Catholic High School, Reading, Pennsylvania, T: Mary Buchanan
- York, USPA06, York County Science and Engineering Fair
- BMED029** **The Regulation of ATF4/CHOP by c-Myc in NSAID-induced Chemoprevention**  
Elizabeth Kuree Huh, 18, Senior, School: York Suburban Senior High School, York, Pennsylvania, T: Leslie Gentyzel
- MATS015** **Synthesizing 3D Printable Self-Healing Materials**  
Jessica Jiaxin Sun, 18, Senior, School: Red Lion Area Senior High School, Red Lion, Pennsylvania, T: Valerie Stone

#### RHODE ISLAND

Warwick, USRI50, Rhode Island Science and Engineering Fair

- BMED049** **Rising Rates of Antibiotic Resistance Among in Infants with Urinary Tract Infections**
- ##  
Priyanka Bonifaz, 19, Senior, School: Barrington High School, Barrington, Rhode Island, T: Diana Siliezar
- EAEV046** **Impacts of 1,2-Propanediol Effluent Discharge on Reproductive Rates and Dispersion Patterns of *Anabaena inaequalis* and *Chlamydomonas reinhardtii***
- #  
Nicolas Maxwell Berg, 18, Senior, School: Bishop Hendricken High School, Warwick, Rhode Island, T: Jeremy Graney

#### SOUTH CAROLINA

Aiken, USSC01, Central Savannah River Area Science and Engineering Fair

- ENBM039** **Development of a Low Cost Multi-Analyte Microfluidic Device**  
Srikrishnan Pillai Raju, 16, Sophomore, School: Lakeside High School, Evans, Georgia, T: Charlotte Smith
- Bluffton, USSC02, Sea Island Regional Science Fair
- ANIM027** **Listening for Differences: Analyzing Bat Feeding Behavior**  
Luke Kessler McGuire, 17, Junior, School: Beaufort High School, Beaufort, South Carolina, T: Nancy Ungvarsky
- EAEV038** **A Comparative Study of Different Plant and Limestone Combinations, and Their Ability to Naturally Mitigate the Harmful Effects of Ocean Acidification on Costal Coral Reef Health**
- #  
Lucas Alexander Tomita, 17, Sophomore, School: Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Gilbert Ramsey
- EGPH015** **A Study on Sustainable, Environmentally-Friendly, Alternative Insulators**  
Benjamin James Eisinger, 17, Sophomore, School: Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Gilbert Ramsey
- ENBM031** **Structure of Lys B28 Pro B29 Insulin**  
Xingnan Frank Lin, 18, Junior, School: Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Yuan He
- MATS029** **A Comparative Analysis of Alternative Heating Methods of an Artificial Nylon Muscle**
- #  
Maile Summer Paulmeier, 16, Sophomore, School: Bluffton High School, Bluffton, South Carolina, T: Justin Robinson

*Charleston, USSC03, Low Country Science Fair*

**ENBM067 Identifying Limiting Nutrient on Stem Cell Spheroid Viability for Human Cardiac Tissue Regeneration**

Jenny Junru Yao, 17, Junior, School: Academic Magnet High School, North Charleston, South Carolina, T: Katharine Metzner-Roop

**TMED061 The Effects of Rock Steady Boxing on Cognition in Parkinson's Disease**

Ali Rose DeLambo, 19, Senior, School: Academic Magnet High School, North Charleston, South Carolina, T: Katharine Metzger-Roop

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

**EGCH019 Pack More and Charge Faster: To Improve the Capacity Retention and the Rate Performance of Lithium Batteries**

Sophia P. Zhou, 15, Sophomore, School: Dutch Fork High School, Irmo, South Carolina, T: Uma Purohit

**MATH031 Upper Bound on the Burning Number of Graphs**

Max RuiKang Land, 18, Senior, School: Dutch Fork High School, Irmo, South Carolina, T: Brittany Holden

*Spartanburg, USSC07, Piedmont South Carolina Region III Science Fair*

**MATS066 Answers from Ashes**

Harrison Thomas Homan, 17, Sophomore, School: James F. Byrnes High School, Duncan, South Carolina, T: Patricia White

## SOUTH DAKOTA

*Aberdeen, USSD01, Northern South Dakota Science and Math Fair*

**CHEM034 Comparing Ethanol Yield from *Saccharomyces cerevisiae* in Healthy and Decaying Starch and Sugar Solutions**

Jake Henry Flakus, 18, Senior, School: Central High School, Aberdeen, South Dakota, T: Charles Hermansen

**EGCH023 The Fuel of the Future**

Daniel Austin Orr, 16, Sophomore, School: Northwestern High School, Mellette, South Dakota, T: Denise Clemens

**ENBM040T Design for an Alternate Wireless Medical Auscultation Device**

Hamza Asif Jamal, 18, Senior, John Prosper, 19, Senior, School: Aberdeen Central High School, Aberdeen, South Dakota, T: Charles Hermansen

*Brookings, USSD02, Eastern South Dakota Science and Engineering Fair*

**BEHA032 The Dynamics of Habituation: A Neural Study of the Effects of Repeated Exposures to Risky Behaviors on Cognitive Control and Emotional Responses in the Adolescent Brain**

## Kashfia Nehrin Rahman, 17, Junior, School: Brookings High School, Brookings, South Dakota, T: Lee Schmidt

**BMED050 Skin Deep: The Effect of Skin Temperature on Touch Perception**

Christopher Jon De Groot, 19, Senior, School: Unity Christian High School, Orange City, Iowa, T: Timothy Kamp

**MATH032T Benford's Law: Fact or Fiction?**

Caden Glen Zonnefeld, 18, Junior, Jacob Lee Vreugdenhil, 18, Junior, School: Unity Christian High School, Orange City, Iowa, T: Timothy Kamp

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

**BCHM017 Buffalo vs. Beef: Analyzing Lipid Components in Search of Potential Health Benefits**

Elsie Monique DuBray, 17, Junior, School: Timber Lake High School, Timber Lake, South Dakota, T: LuAnn Lindskov

**BEHA039 The Effect of Color Preference on Quick Problem-Solving in Young Students**

Sarah Barnica, 16, Sophomore, School: Timber Lake High School, Timber Lake, South Dakota, T: Donna Aberle

*Mitchell, USSD04, South Central South Dakota Science and Engineering Fair*

**BMED051 The Relationship Between Artificial Sugars and Increased Lipid Levels**

# Alexander J. Rodriguez, 18, Senior, School: Mitchell High School, Mitchell, South Dakota, T: Julie Olson

**BMED052T Artemisia Annua**

Emma Elizabeth Heezen, 18, Senior, Noah Lee Heezen, 17, Sophomore, School: Plankinton High School, Plankinton, South Dakota, T: Kevin McElhinney

**TMED030 The Effects of Phytoestrogens, Resveratrol, and Lycopene on**



**Agrobacterium tumefaciens Induced Tumors**

# Thea Lauren Patrick, 17, Junior, School: Mitchell High School, Mitchell, South Dakota, T: Julie Olson

**TENNESSEE**

*Chattanooga, USTN01, Chattanooga Regional Science and Engineering Fair*

**EGCH024T Better Biodiesels: Converting Autumn Olive Oil into Winterized Fuel**  
 Mariafernanda Tirado, 17, Sophomore, Kelli Luann Buckaloo, 17, Sophomore,  
 School: McMinn County High School, Athens, Tennessee, T: Cindy Moses

**SOFT025 3D Computer Vision: Human/Machine Interaction via Kinect**  
 Benjamin Thomas McDonough, 16, Freshman, School: McCallie School,  
 Chattanooga, Tennessee, T: Nancy Olenchek

*Cookeville, USTN02, Cumberland Plateau Regional Science and Engineering Fair*

**BMED010 The Effect of Boiling Time on the Vitamin C Concentration of Green Bell Peppers**  
 Amber Cui, 15, Freshman, School: Cookeville High School, Cookeville,  
 Tennessee, T: Jie Cui

*Knoxville, USTN04, Southern Appalachian Science and Engineering Fair*

**EGCH046 Quantifying the Evolution of Gas from Li-Ion Battery Materials**  
 Ryan Robert Armstrong, 19, Senior, School: Oak Ridge High School, Oak Ridge,  
 Tennessee, T: Tamara Carneim

**PLNT033 Identification of Volatiles Produced by Agrobacterium**  
 Michael XiYang Lin, 17, Junior, School: Farragut High School, Knoxville,  
 Tennessee, T: Neely Tonos

*Memphis, USTN05, Memphis-Shelby County Science and Engineering Fair*

**EBED049 Design, Analysis, and Implementation of a Portable, Low-Cost, and Bluetooth ECG Device**  
 Osman Celikok, 17, Junior, School: Pleasant View School, Memphis, Tennessee,  
 T: Farhana Chowdhury

*Nashville, USTN06, Middle Tennessee Science and Engineering Fair*

**MCRO057 The Effect of Circulation Rate on Bacteria within Library Books**  
 Cheyenne Nancy Deibert, 17, Sophomore, School: Clarksville Academy,  
 Clarksville, Tennessee, T: Jennifer Moore

**ROBO026 ARGO: Anthropomorphic Facial Emotion Recognition and Generation Objective through Machine Learning**  
 Gabrielle Kaili Liu, 16, Sophomore, School: Ravenwood High School,  
 Brentwood, Tennessee, T: Eric Brock

**TEXAS**

*Dallas, USTX01, Beal Bank Dallas Regional Science and Engineering Fair*

**BCHM004 Investigating the Effects of 2,3-Dihydroxybenzoic Acid Extraction from *Salvinia molesta* as Means for Treatment in Harmful Microorganisms**  
 Blake Harrison Bathman, 16, Sophomore, School: Williams High School, Plano,  
 Texas, T: Vashka Desai

**BCHM010 Utilization of Epigallocatechin Gallate and Serine/Asparagine Compounds as a Natural Therapeutic for Glycosylation-Inhibited Breakdown of the Zika Virus Ectodomain**  
 Sangita Vasikaran, 16, Sophomore, School: Jasper High School, Plano, Texas,  
 T: Pat Kite

**CHEM007 Doped Perovskites for Catalyzing Urea Oxidation**  
 Brian Ling Ho, 19, Senior, School: Plano West Senior High School, Plano, Texas,  
 T: Neil Milburn

**EAEV015 Testing the Waters: Development of A Novel Chitosan-Based Water Filter for Industrial and Third World Applications**  
 Khushi Thakkar, 15, Freshman, School: T.C. Jasper High School, Plano, Texas,  
 T: Pat Kite

**EBED007 Development of an Assistive and Rehabilitative Hand Orthosis and Its Complementary Control Systems**  
 Muhammad Nuhan Ahnaf, 18, Senior, School: Plano East Senior High School,  
 Plano, Texas, T: Julie Baker

- ENBM004** **Novel Point-of-Care, Non-Invasive Mild Traumatic Brain Injury (mTBI) or Concussion Diagnostic Tool**  
Paritosh Suri, 17, Sophomore, School: Jasper High School, Plano, Texas, T: Patricia Kite
- ENMC010** **Improved Brushless DC Motor**  
Michael Serge Pozmantir, 16, Freshman, School: Imagine International Academy of North Texas, McKinney, Texas, T: Jeffrey Smith
- MATS050** **Cellulose Nanocrystals for Security Applications: Embedding Non-Optical Signatures Provided by Nanoparticles into Cellulose Nanocrystal Chiral Nematic Films**
- ##** Nicky Wojtania, 18, Senior, School: Plano West Senior High School, Plano, Texas, T: Neil Milburn
- El Paso, USTX02, Sun Country Science Fair*
- EAEV022** **Moringa oleifera: Purify Your Water Supply**  
Maya Cameron Navar, 16, Junior, School: Radford School, El Paso, Texas, T: Gloria Herrera
- MATH011** **The Paradox of Doing It Wrong in Order to Do It Right**  
Matthew Tiberius Favela-Tomlinson, 19, Senior, School: El Dorado High School, El Paso, Texas, T: Antonio Castruita
- TMED060** **Nanocarrier Delivery of siRNA for Glioma Therapy**  
Adriana Camila Mares, 18, Senior, School: Mission Early College High School, El Paso, Texas, T: Helen Geller
- Fort Worth, USTX03, Fort Worth Regional Science and Engineering Fair*
- CELL012** **The Effects of Glucose on the Behavior and Nervous System of *C. elegans***  
Abhishek Shah, 17, Senior, School: John H. Guyer High School, Denton, Texas, T: Brandi Guilford
- CHEM014** **Development of a Rapid, Reusable Sensing Mechanism for the Selective Identification of Heavy Metal Contaminants in Water: An Implementation of Functionalized Isotropic Silver Nanoparticles for Toxic Ion Detection**  
Abhishek Mohan, 18, Junior, School: Texas Academy of Mathematics and Science, Denton, Texas, T: Samuel Earls
- EGCH030** **Nanoscale Engineering: Activated Pecan Shell for EDLC Application**  
Sarah Jin Zou, 18, Junior, School: Texas Academy of Mathematics and Science, Denton, Texas, T: Samuel Earls
- MATS051** **Bio-Implants for HRQoL Applications: RSM Model Optimization of the Laser Processing Parameters to Improve Bio-Compatibility of Ti-6Al-4V Alloys**  
Ashwin Kumar, 18, Junior, School: Texas Academy of Math and Science, Denton, Texas, T: Samuel Earls
- MCRO010** **Nano Today, Huge Tomorrow: Improving Antibiotic Drug Delivery for *S. epidermidis* Strains with a Novel CNT Dispersion**
- ##** Afeefah Fatimah Khazi-Syed, 18, Senior, School: Harmony School of Innovation - Fort Worth, Fort Worth, Texas, T: Paulette Petta
- PHYS012** **Foiled: Testing Lift and Drag on Airfoils in a Wind Tunnel**  
Chloe Elisabeth Ayers, 18, Senior, School: Colleyville Heritage High School, Colleyville, Texas, T: Sonya Loughran
- Brownsville, USTX04, Rio Grande Valley Regional Science and Engineering Fair*
- BMED019T** **The Correlation between Cortisol Induced PTSD and Diabetes as Seen in *Rattus norvegicus***  
Jose Roberto Ramirez, 19, Senior, School: Weslaco East High School, Weslaco, Texas, Bianca Laren Castro, 18, Senior, UTRGV Mathematics and Science Academy, Edinburg, Texas, T: Timothy Sears
- EGPH003** **Independent**  
Vanessa Ann Quintero, 17, Sophomore, School: Lopez Early College High School, Brownsville, Texas, T: Janeth Cain
- PLNT049** **In vitro and in vivo Efficiency Assessment of Selected Biopesticides against the Sweet Potato Whitefly, *Bemisia tabaci* (Genadius) Biotype B on Tomato Plants**
- #** Ana Laura Trevino, 18, Senior, School: Weslaco East High School, Weslaco,

Texas, T: Jenna Grado

*Houston, USTX05, Science Engineering Fair of Houston*

**ANIM009 The Characterization of the Retinal Determination Network in *Drosophila melanogaster* in order to Optimize the Diagnosis and Treatment of Human Retinal Disease**

# Devanshi Udeshi, 17, Junior, School: Stephen F. Austin High School, Sugar Land, Texas, T: Tina Jackson

**ANIM022 Electromagnetoreception in Planaria**

Alexandra Perez Tan, 17, Sophomore, School: Ball High School, Galveston, Texas, T: Esther Sjostrom

**BEHA012 Ingenuity in Arithmetic**

Amaha Solomon Ghide, 17, Junior, School: The Academy of Science and Technology, The Woodlands, Texas, T: Larry Walker

**CHEM015 A Pill's Perilous Pathway**

Roshni Sen, 18, Senior, School: Academy of Science and Technology, The Woodlands, Texas, T: Merritt Lyubov

**EBED008 A Smart Bionic Leg Brace: An Electromechanically Actuated Active-Assist Wearable Orthotic Device for Comprehensive Restoration of Gait Characteristics across Everyday Mobility Scenarios**

# Syamantak Payra, 16, Junior, School: Clear Brook High School, Friendswood, Texas, T: Alaina Garza

**EGPH007 Optimizing Micro-Geometric Bladeless Wind Turbines, Year Five**

Sarah May Palmer, 19, Senior, School: Friendswood High School, Friendswood, Texas, T: Dawne Welch

**ENBM016 Predicting Mechanical Damage from Glioblastoma Tumor Growth**

Shobha Dasari, 17, Sophomore, School: Academy of Science and Technology, The Woodlands, Texas, T: Linda Costanzo

**ENEV016 Engineering an Environmentally Friendly Drilling Fluid**

Jill Elizabeth Bohnet, 16, Sophomore, School: The Woodlands College Park High School, The Woodlands, Texas, T: Larry Walker

**ENEV077 Crude Oil: Can Microbes Eat It?**

Shefali Chopra, 19, Senior, School: Clear Falls High School, League City, Texas, T: Laura Clark

**ENMC017 Cryogenic Therosuit for Manned Mission to Titan**

Wittiker Benjamin Schlauch, 18, Senior, School: Clear Brook High School, Friendswood, Texas, T: Alaina Garza

**MATS016 Bio-Polymeric Study for Recycling and Replacing Polyethylene Terephthalate (Through Reprocessed Polyurethane Polyols and Algal Bioplastic Substitute)**

# Andrew Dong-Hyun Kim, 18, Junior, School: The Woodlands College Park High School, The Woodlands, Texas, T: Larry Walker

**TMED007 Novel Blood Tests to Diagnose *Preeclampsia*: Saving the Lives of Mothers and Children**

# Tanya Kumar, 18, Senior, School: Clear Brook High School, Friendswood, Texas, T: Alaina Garza

**TMED014T The Miracle Pill, III**

Nandika Nair, 17, Junior, Sreshta Varcsvi Margan, 17, Junior, Ajitha Karpagam Anand, 17, Junior, School: The Academy of Science and Technology, Conroe, Texas, T: Linda Costanzo

*Kilgore, USTX06, East Texas Regional Science Fair*

**PHYS017 Driving Yourself to Deaf: Comparing Sound Levels Produced by Hand-held T-Post Drivers**

Ryan Dougherty, 16, Freshman, School: Prairiland High School, Pattonville, Texas, T: Grant Ballard

*Laredo, USTX07, United Independent School District Regional Science Fair*

**ENMC009 Avionic Engine Supremacy**

Carlos Alberto Mendez, 18, Junior, School: United High School, Laredo, Texas, T: Melinda Portillo

*Lubbock, USTX08, South Plains Regional Science and Engineering Fair*

**ENMC018 Plasma Actuator, "Not A Drag," Year II**

Robert Ezekiel Kollman, 19, Senior, School: Shallowater High School T-STEM Academy, Shallowater, Texas, T: Leslie Griffis

- PLNT034** **The Effect of Irrigation Rates on the Growth and Yield of *Gossypium hirsutum* L.**  
# David Anthony Mendoza, 18, Senior, School: Christ the King Cathedral School, Lubbock, Texas, T: Alicea Chaoupka  
*Odessa, USTX09, Permian Basin Regional Science Fair*
- ENEV017T** **Shocking! A Study of Electrocoagulation in Treatment of River Water**  
Garrett Eric Curtis Guerrero, 15, Freshman, School: Guerrero Home School, San Angelo, Texas, T: Annette Guerrero, Matthew Jeffrey Trees, 15, Freshman, School: Trees Family Home School, San Angelo, Texas, T: Janice Trees
- PHYS044** **Finding the Perfect Slot**  
Roarke Zimmer, 19, Senior, School: Alpine High School, Alpine, Texas, T: Charles Mackay  
San Antonio, USTX11, Alamo Regional Science and Engineering Fair
- ANIM010** **The Effects of Secondhand Smoke on *Drosophila melanogaster***  
Abigail Thyra Parker, 16, Freshman, School: Keystone School, San Antonio Texas, Texas, T: Jason Nydegger
- ANIM026** **Phase Two: Analysis of Effects of Carbo Activatus on Broiler Weight and Carcass Protein Content**  
Olivia Raquel Wise-Dent, 18, Senior, School: James Madison High School, San Antonio, Texas, T: Janell McMullan
- BMED020T** **Polymorphisms in LEF-1 and TBX-21 in Association with the Susceptibility of HIV**  
Gisell Chantilly Loreda, 19, Senior, School: Health Careers High School, San Antonio, Texas, T: Catherine Gonzalez Yang Liu, 18, Senior, School: Northside Health Careers High School, San Antonio, Texas, T: Catherine Gonzalez
- EBED009** **Developing a More Efficient Quantum Protocol Using Vehicle Signals and Photon Polarization**  
Evan McKenna Meade, 18, Junior, School: Keystone School, San Antonio, Texas, T: Jason Nydegger
- ENBM017** **Utilizing Cardiac and Pulmonary Function with Piezoelectricity to Power a Cardiac Pacemaker, Year III**  
#### Isuru Ashan Somawardana, 18, Senior, School: Keystone School, San Antonio, Texas, T: Jason Nydegger
- TMED008** **Neuroprotective Effects of Melatonin following TBI**  
Andrew Robert Mazdak Kamali, 18, Senior, School: Fox Tech High School for Health & Law Professions, San Antonio, Texas, T: Natasha Riojas
- TMED015** **A Novel Approach to the Engineering of a Gold Nanorod Based Multiplex Biosensor**  
# Grace Katherine Ranft-Garcia, 18, Senior, School: Robert E. Lee High School, San Antonio, Texas, T: Lane Smiley  
*Waco, USTX12, Central Texas Science and Engineering Fair*
- BCHM003** **Enzyme Dynamics of Biofilm-Breaking Dispersin B**  
## Edward Sangyoon Kim, 18, Senior, School: Midway High School, Waco, Texas, T: Kathy McMillan
- PLNT019** **The Reaction of Vegetation to Cultivation after Remaining Undisturbed for 15 Years**  
Neeraj Bhakta, 18, Junior, School: C. H. Yoe High School, Cameron, Texas, T: Toni Lafferty  
*Austin, USTX13, Austin Energy Regional Science Festival*
- BCHM008** **Insights into the Interaction of N-APP with Death Receptor 6 in Inducing Neuronal Apoptosis**  
## Yingxuan (Jason) Tan, 18, Senior, School: College Station High School, College Station, Texas, T: Casey Akin
- EBED010T** **Homemade Cycling Power Meter**  
Benjamin Marsan, 17, Sophomore, Katelynne Giulia Marsan#, 19, Senior, School: Dripping Springs High School, Dripping Springs, Texas, T: Alissa Nevin
- EGCH002** **Ultra-Thin Asymmetric Supercapacitor: Utilizing Nano-Porous Nickel and Graphene-Copper for a High Energy Density**  
Alexander Graziani Mancevski, 17, Junior, School: Liberal Arts and Science Academy High School, Austin, Texas, T: Amy Moore

- ENEV012**     **Effective Remediation of Air Pollution and Sustainable Electricity Production Using an Algal Bio Photo-Voltaic Fuel Cell (BPFC), Phase III**  
 ## Sai Sameer Pusapaty, 18, Senior, School: Liberal Arts and Science Academy, Austin, Texas, T: Amy Moore
- MATS009**     **Novel Synthesis of Thermo-chromic VO<sub>2</sub> Nanocomposite Films for Energy-Efficient Windows**  
 Joel Abraham, 18, Senior, School: Westwood High School, Austin, Texas, T: Judy Grimsley
- SOFT011**     **Power-efficient, Delay and Spatial Error Tolerant, Dynamic 3D Network Analysis**  
 # Rucha Joshi, 17, Junior, School: Westwood High School, Austin, Texas, T: Judy Grimsley
- Laredo, USTX14, Laredo Independent School District Science Fair*
- ANIM017**     **A Study of the Behavior of *Mus musculus* in the Presence of Ultrasonic Frequencies to Test the Possible Viability of Ultrasonic Frequencies as a way to Reduce Wildlife Hazards on Roadways**  
 Maegan Yeary, 17, Junior, School: J.W. Nixon High School, Laredo, Texas, T: Itzel Hinojosa
- MCRO043**     **The Repercussions of Probiotic Supplementation of *Escherichia coli* Growth**  
 Jazmine Odeet Cardenas, 17, Junior, School: J.W. Nixon High School, Laredo, Texas, T: Eduardo Lopez
- Corpus Christi, USTX15, Coastal Bend Regional Science Fair*
- ENEV079**     **Nanotechnology and Environmental Clean-Up: A Refined Solution - Distillation of Oil**  
 William Philip Houf, 17, Sophomore, School: Santa Gertrudis Academy High School, Kingsville, Texas, T: Adley Canales
- TMED052**     **Dirty Lab Coats: Thinking Inside of the Box to Prevent H.A.I.s**  
 # Tatiana Victorovna Ortiz, 17, Sophomore, School: Flour Bluff High School, Corpus Christi, Texas, T: Tracy Erickson
- San Antonio, USTX50, Texas Science and Engineering Fair*
- BMED064**     **A Patch Clamp Study of TRPM7 Ion Channels: East Indian Sandalwood Oil (EISO) as a Possible Therapeutic Target for Cancer, Year II**  
 # Nia Myfanwy Clements, 17, Junior, School: Keystone School, San Antonio, Texas, T: Jason Nydegger
- CBIO037T**     **A Multi-Omics Predictive Pipeline for the Discovery of Cancer Driver Genes**  
 # Shriya Beesam#, 17, Junior, Adhya Beesam#, 17, Junior, School: Plano East Senior High School, Plano, Texas, T: Julie Baker
- CELL045T**     **Site-Specific Integration of Large DNA Fragments: Evaluating and Redesigning Genome Editing Systems**  
 # Yesh Satyajit Doctor#, 17, Junior, Kshitij Sachan#, 17, Junior, School: Plano East Senior High School, Plano, Texas, T: Julie Baker
- CHEM058**     **Silk Torsional Actuators: Automatic Moisture-Activated Emergency Locator for Aircraft Life Vests**  
 # Joycelyn Yiu, 19, Senior, School: Plano Senior High School, Plano, Texas, T: Tiffany Grimes
- EGPH025T**     **Utilization of *Rosoideae rosa* Nanostructures for Optimization of Solar Cell Light Management**  
 Anthony Jiang, 16, Sophomore, School: Jasper High School, Plano, Texas, T: Pat Kite Benjamin Gu Li, 16, Sophomore, School: Jasper High School, Plano, Texas, T: Patricia Kite
- MCRO050**     **A Novel Method to Induce and Upregulate the Production of Stable Antistaphylococcal Compounds via the Combined-Cultivation of *S. salivarius* and *Streptomyces***  
 Arjun Jain, 17, Junior, School: Westwood High School, Austin, Texas, T: Judy Grimsley
- ROBO034**     **Autonomous Vehicle for Convoys**  
 Nikola Djordjevic-Kisacanin, 16, Freshman, School: Jasper High School, Plano, Texas, T: Patricia Kite
- SOFT030**     **Edison Vein ID (EVID) System: User Authentication through Peripheral**

**Vein Biometrics**

Ritik Patnaik, 16, Sophomore, School: Plano East Senior High School, Plano, Texas, T: Julie Baker

**UTAH**

Layton, *USUT01, North Davis Area Science and Engineering Fair*

**ANIM033 The Effect of Different Genres of Music When Grooming a Horse on the Neck and Withers after Exercise**

## Abigail Louise Faz, 17, Junior, School: Northridge High School, Layton, Utah, T: Colleen Bagley

**ENMC041 Development of a Low-Cost Articulated Arm 3D Printer**

Zachary Scott Allen, 17, Junior, School: Northridge High School, Layton, Utah, T: Colleen Bagley

**ENMC042 Blown Away: Improving Propeller Efficiency with Natural Flow Propeller Shrouds**

## Andrew Bennett, 17, Junior, School: Bountiful High School, Bountiful, Utah, T: Austin Walker

**MCRO046 The Limits of *Pseudomonas chlororaphis* O6 Under Osmotic Stress**

Ariel Norman, 17, Junior, School: Woods Cross High School, Woods Cross, Utah, T: Jana Barrow

**PHYS035 Spectral Measurements of Near-Earth Asteroids**

### Kelsey Mackenna Barber, 18, Senior, School: Bountiful High School, Bountiful, Utah, T: Austin Walker

**ROBO022 Genetic Algorithms and Sorting Data**

Benjamin Garrett DeVries, 15, Freshman, School: Woods Cross High School, Woods Cross, Utah, T: Janette Duffin

Cedar City, *USUT02, Southern Utah Science and Engineering Fair*

**ENEV060 Filtering Turbidity Using Sediment Filters versus Balfourianae Filters**

Sydnee Kay, 18, Junior, School: Success Academy DSU, St. George, Utah, T: Charmain Brammer

**ENMC074 The Effect of Dimple Configuration on Golf Ball Distance**

Hunter Twitchell, 17, Junior, School: Success Academy DSU, St. George, Utah, T: Charmain Brammer

**MCRO058 The Zone of Inhibition in *Streptococcus mutans* and *Streptococcus oralis* using Antibacterials**

Maycee Dawn Redfean, 17, Junior, School: DSU SUCCESS Academy, St. George, Utah, T: Charmain Brammer

**SOFT046 Mitigating Effects of Database Breaches with Stronger Password Storage Strategies**

Bradley Michael Walters, 17, Junior, School: DSU SUCCESS Academy, St. George, Utah, T: Chris Rigby

Ogden, *USUT03, Weber Area Science and Engineering Fair*

**BEHA033 Fighting the Silent Epidemic: The Effects of Stress-Reduction Techniques on PTSD, Depression, and Anxiety**

# Quristienna Iris Bateman, 18, Senior, School: Bonneville High School, Washington Terrace, Utah, T: Benjamin Prall

**BMED053 The Effect of Antibacterial Toothpaste on the Ecology of Oral Flora**

# Matthew Davis Staten, 16, Sophomore, School: Bonneville High School, Washington Terrace, Utah, T: Matthew Patterson

**EAEV047 Evaluating the Viability of Reducing Plastic Waste with *Tenebrio molitor***

# Katee Brooke Hughes, 18, Senior, School: Bonneville High School, Washington Terrace, Utah, T: Benjamin Prall

**EGCH044T An Analysis on the Upscaling of Biodiesel Production from Food Waste**

### Tyler Michael Staten###, 19, Senior, School: Bonneville High School, Ogden, Utah, T: Matt Patterson Riley Paul Midgley##, 19, Senior, School: Bonneville, Ogden, Utah, T: Matthew Patterson

**PLNT040 Corn Silage Yield Test**

Jace Michael Marriott, 15, Freshman, School: Fremont High School, Plain City, Utah, T: Angela Pontuis

Provo, *USUT04, Central Utah STEM Fair*

- ANIM050** **The Effects of Anoxic Conditioning on Oxidative Stress in Mosquitoes in Increasing Overall Antioxidant Capacity, Lifespan, and Activity**  
Aubrey Anne Moedl, 18, Senior, School: American Fork High School, American Fork, Utah, T: Robert Adamson
- BCHM021** **LRBA: A Possible Key Player in Cancer Cell Autophagy**  
Kristina Marie Kohler, 18, Senior, School: American Fork High School, American Fork, Utah, T: Robert Adamson
- ENEV052** **Powerless Desalination: The Development of a Novel PEGylated Membrane to Exploit Ambient Thermal Energy Gradients of the Ocean**  
# Hyrum Thomas Diesen, 19, Senior, School: Pleasant Grove High School, Pleasant Grove, Utah, T: David van Dijk
- PHYS048** **3D Printed Micro Patterned Gas Electron Multiplier**  
# Adam Syndergaard, 18, Senior, School: Maple Mountain High School, Spanish Fork, Utah, T: Kyle Miller
- Salt Lake City, USUT05, Salt Lake Valley Science and Engineering Fair*
- BEHA062T** **"Compassion Fade" and the Limitations of Student Subjects in Social Science Research**  
Alexander Karl Sun, 18, Junior, School: Hillcrest High School, Midvale, Utah, T: Alexander Mettler, Emma Sun, 15, Freshman, School: The Waterford School, Sandy, Utah, T: Nancy Woller
- EAEV048** **The Correlation between Presence of Radon Gas in Residences and Diagnosis of Type 1 Diabetes**  
Julia Kathryn Sherman, 18, Senior, School: West High School, Salt Lake City, Utah, T: Crystal King
- ENBM041** **Analysis of Retinal Fundus Images to Detect Macular Degeneration Using Machine Learning Methods**  
# Alexander Cheng, 16, Sophomore, School: Hillcrest High School, Midvale, Utah, T: Alexander Mettler
- ENEV040** **Waste Embraced 2.0: A Novel Study of the Effects of Optimized Struvite Precipitation on Biogas Production and Resource Recovery from Municipal Landfill Leachate and Wastewater Centrate**  
Tanisha Martheswaran, 17, Junior, School: Waterford School, Sandy, Utah, T: James Harris
- MCRO039T** **An Investigation into Immune Properties of Tetrahymena: The Effect of Environment and Genotype on *Tetrahymena thermophila* Dicer Upregulation, Survival, Morphology, and Phenotype**  
# Tyrell Johnathan Floyd#, 18, Senior, Anna Graciela Mancera, 19, Senior, School: Salt Lake Center for Science Education, Salt Lake City, Utah, T: Shea Wickelson
- PHYS036** **Identification of Asteroid Collisional Families and Orbital Groups through Computational Clustering Techniques**  
# Annie Tianjin Yun, 17, Senior, School: West High School, Salt Lake City, Utah, T: Enrique Arce-Larreta
- Ogden, USUT07, Harold W. & Helen M. Ritchey Science and Engineering Fair of Utah*
- CBIO026** **Effects of Altruistic Tendencies on the Survival of Cells in a Simulated Environment**  
Wyatt Graham Brannon, 15, Freshman, School: InTech Collegiate High School, North Logan, Utah, T: Tracy Davidson
- CHEM035** **The Effect of Natural Antioxidants on Reducing Oxidation**  
Mizuho Obayashi, 18, Senior, School: Ogden Senior High School, Ogden, Utah, T: Gillian Hanson
- CHEM067** **Chelation: Is Color the Proof?**  
Grace Lauren Ericson, 18, Senior, School: Morgan High School, Morgan, Utah, T: Ed Walker
- ENBM042** **Isolating Motion Patterns in Compromised Human Gait as Proxy for Amputees Wearing Prosthetics**  
Michael James Remley, 17, Junior, School: Northern Utah Academy for Math Engineering and Science, Layton, Utah, T: Nickole Brooks
- MCRO038** **Kimchi Bacterial Affects against Common Sinusitis Bacteria**  
# Tristen Kelson, 17, Junior, School: Ogden Senior High School, Ogden, Utah, T: Matthew Nicholaou

## VIRGINIA

*Arlington, USVA01, Northern Virginia Science and Engineering Fair*

**BEHA016 The Effect of Highway Font Type on Readability of Text Under Blurred Conditions**

Jacob Hall, 18, Junior, School: H-B Woodlawn Secondary Program, Arlington, Virginia, T: Meghan French

**PHYS018 The Mathematical Identification of Exoplanet Candidates through N-body Simulations**

Ana Luisa Tio Humphrey, 17, Sophomore, School: T.C. Williams High School, Alexandria, Virginia, T: Shawn Lowe

*Charlottesville, USVA02, Virginia Piedmont Regional Science Fair*

**ENBM062 The Morris Orthotic: A Smart Orthotic for Diabetic Patients**

Margaret Elizabeth Richey, 17, Junior, School: Western Albemarle High School, Crozet, Virginia, T: Carol Stutzman

**TMED059 Necrosis of Lung Adenocarcinoma by Targeting a Novel Egg-Specific Protein**

Mriganka Mandal, 16, Sophomore, School: Albemarle High School, Charlottesville, Virginia, T: Kirsten Fuoti

*Fairfax, USVA03, Fairfax County Regional Science and Engineering Fair*

**ANIM034 Analyzing the Role of Intralipid in the Treatment of Beta-Adrenergic Blocker Overdose in *Daphnia magna***

# Nicholas Lin, 16, Sophomore, School: Westfield High School, Chantilly, Virginia, T: Kristin Flynn

**CBIO025 DNALoopR: A Novel High-Performance Machine Learning Predictor to Identify Genome-Wide 3D DNA Interactions in Cancer**

# Prathik Naidu, 18, Senior, School: Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Thomas Larson

**EAEV050 Estimating CO<sub>2</sub> and CH<sub>4</sub> Emissions from Washington DC Using Low Cost Sensors and Small Drone Technology**

# Siona Prasad, 16, Sophomore, School: Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Sandra Chhabra

**EBED028 High Resolution Weather Tracking: A Micronet**

Brenden Chandler Duffy, 17, Junior, School: Lake Braddock Secondary School, Burke, Virginia, T: Maureen Goble

**EGCH025T The Future of Potable Water: Air Cathode Microbial Desalination Cells**

Rishabh Kuldeep Jain, 17, Junior, School: Alexandria Irene Schmid, 17, Junior, School: George C. Marshall High School, Falls Church, Virginia, T: Nimel Theodore

**ENMC045 Real-Time 3D Printing Error Detection and Correction**

William Makinen, 17, Junior, School: West Potomac High School, Alexandria, Virginia, T: John Chapman

**MATH033 A Novel Supervised Machine Learning Approach to Predicting Crime Information**

Palash Shah, 16, Sophomore, School: Westfield High School, Chantilly, Virginia, T: Mary Constantino

**SOFT027T Automating Identification of Terrorist Recruitment on Social Media Platforms**

Mihir Patel, 17, Junior, School: Nikhil Sardana, 17, Junior, School: Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Ria Galanos

**TMED032 A Novel Approach to Improving Photodynamic Therapy through Analysis of the Effects of Induced Hypoxia and Utilization of Bioluminescence**

# Shannen Kelly Prindle, 17, Junior, School: Oakton High School, Vienna, Virginia, T: Grace Wang

*Harrisonburg, USVA04, Shenandoah Valley Regional Science Fair*

**BMED032 The Effect of Exogenous Melatonin on the Memory Retention of Wingless *Drosophila melanogaster***

Jessica Tate Clatterbuck, 18, Senior, School: Mountain Vista Governor's School, Middletown, Virginia, T: Roseanne Williamson

**EAEV023 The Effect of Light on Fireflies**

Savannah Madison Long, 18, Senior, School: Mountain Vista Governor's School, Middletown, Virginia, T: Judy Cain

*Lynchburg, USVA05, Central Virginia Regional Science Fair*



- MATS077** # **The Development of an Efficient Space Radiation Shielding Fabric**  
Hannah Mae Steele, 17, Junior, School: Liberty High School, Bedford, Virginia,  
T: Michele Coghill
- MCRO015** **The Effect of Tetracycline, Azithromycin, and Hypothermia on Populations of *Naegleria lovaniensis***  
Joseph Li Du, 18, Junior, School: Jefferson Forest High School, Forest, Virginia,  
T: Michele Coghill
- Manassas, USVA06, Prince William-Manassas Regional Science Fair*
- ENMC028T** **Solar Energy Out on a Limb: A Novel Photovoltaic Energy**  
Hahnbee Lee, 17, Junior, Jarrett J. Lash, 17, Junior, School: The Governor's  
School @ Innovation Park, Manassas, Virginia, T: Ales Psaker
- Ashburn, USVA07, Loudoun County Science and Engineering Fair*
- ENBM045** **Synthesized Limpet Snail Teeth: A Novel Inexpensive Nanocomposite for Stronger Bio-Compatible Prosthetics**  
Soham P. Dessai, 18, Senior, School: Academy of Science, Sterling, Virginia, T:  
Michael Tomlinson
- MATS038** **Development and Testing of 45S5 Bioglass via Acid and Base Sol-Gel Polymerization and Fusing onto *Gallus gallus domesticus* Cervical Bones for Bone Grafting Treatment**  
Aditi Bawa, 19, Senior, School: Loudoun County High School, Leesburg,  
Virginia, T: Terri Moulds
- PHYS037** **On the Stability of Bahcall-Wolf Cusps of Dark Matter Orbiting Supermassive Black Hole Binary Systems**  
Josef McCormack Zimmerman, 18, Senior, School: Academy of Science,  
Sterling, Virginia, T: Jackie Curley
- TMED033** **Reinventing the Catheter: Inhibiting UTIs by Creating a Novel Material Integrated with *Castanea sativa* to Inhibit Quorum Sensing among Nosocomial Infection Causing Bacteria**  
Devina Thapa, 18, Senior, School: Academy of Science, Sterling, Virginia,  
T: Jacqueline Curley
- Roanoke, USVA08, Western Virginia Regional Science Fair*
- ENBM084** **Dilatant Insole to Reduce Damage Inflicted by Peripheral Neuropathy**  
Emily Reid Tenzer, 17, Sophomore, School: Roanoke Valley Governor's School,  
Roanoke, Virginia, T: Mark Levy
- MCRO051** **Assessing Rice Bran's Protective Efficacy against Porcine Rotavirus Infection in IPEC-J2 Cells**  
Christine Longchau Flora, 17, Junior, School: Roanoke Valley Governor's  
School for Science and Technology, Roanoke, Virginia, T: Cindy Bohland
- Norfolk, USVA09, Tidewater Science and Engineering Fair*
- CELL029** **Understanding the Proteins Involved in Regenerative Angiogenesis**  
Riya Palikonda, 18, Senior, School: The Governor's School for Science and  
Technology, Hampton, Virginia, T: Margaret Mulvey
- MATS037** # **Novel Membranes for Synthetic Lungs and Planetary Applications**  
Suparnamaaya Prasad, 17, Junior, School: York High School, Yorktown, Virginia,  
T: Deborah Eckstein
- Radford, USVA10, Blue Ridge Highlands Regional Science Fair*
- BMED021T** **ACTN3, ACE, PPARD, and Outside Factors Influencing High School Male Athletes' Choice to Pursue a Sport**  
Morgan Lee Fisher, 18, Senior, Carly Michele Porter, 18, Senior, School:  
Southwest Virginia Governor's School, Pulaski, Virginia, T: Rebecca Phillips
- ENEV022** **Post-consumer PET as Stock for Additive Manufacturing**  
Kaelum Robb Rodriguez Hasler, 18, Senior, School: Blacksburg High School,  
Blacksburg, Virginia, T: Katharine Davis
- Richmond, USVA11, Metro Richmond STEM Fair*
- CBIO024** **Overcoming Lung Cancer with Novel Supervised Learning Algorithms for Drug Screening and Antibody Conjugated NFC Tags for Smartphone-Enabled Point-of-Care Diagnosis**

- # Pranav Sundar Neyveli, 17, Junior, School: Mills.E.Godwin High School, Henrico, Virginia, T: Dana Delano
- ENEV023** **Removal of Radioactive Strontium from Contaminated Water Using Novel Cost-Effective Biosorbents**  
Michael Hao Pang, 17, Junior, School: Mills Edwin Godwin High School, Henrico, Virginia, T: Samantha Cope
- ENMC044** **An Investigation of Optimal Rural Building Designs for All Earthquake Zones of Turkey**  
Lucas Robert Mayhew, 17, Sophomore, School: Mills E. Godwin High School, Henrico, Virginia, T: Dana Delano
- MCRO037** **The Effect of Tungsten Oxide on Disinfection of *E. coli***  
Sabrina Ye, 15, Freshman, School: Mills E. Godwin High School, Richmond, Virginia, T: Samantha Cope
- ROBO029** **Predicting Lung Cancer Survival and Treatment Using Machine Learning**  
Kevin Rao, 17, Junior, School: Mills E. Godwin High School, Richmond, Virginia, T: Dana Delano
- Warrenton, USVA12, Fauquier County Regional Science & Engineering Fair*
- ENMC043** **The Effect of the Removal of Mass on the Calculated Efficiency of Structural Beams**  
Heather Dawn Wotton, 18, Junior, School: Mountain Vista Governor's School, Warrenton, Virginia, T: Denise Thompson
- Lexington, USVA50, Virginia State Science and Engineering Fair*
- CELL036** **A Novel Systemic Approach to Cardiometabolic Disease with Dual Therapeutics**
- # Marissa Sumathipala, 17, Junior, School: Broad Run High School, Ashburn, Virginia, T: Laura Hicks
- ROBO027T** **The Implementation of RBF Kernel Support Vector Machine Classifiers with Discrete Wavelet Transform on an Electroencephalographically Controlled, Finite Elementally Analyzed, and PID Stabilized Exoskeleton**  
Yashasvi Bolisetty, 17, Junior, Nithin Emil Dass, 17, Junior, Srinidhi Pradyumna Krishnamurthy, 17, Junior, School: Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Jennifer James
- TMED036T** **Inexpensive Mobile Diagnosis of Diabetic Retinopathy Using Deep Learning**  
Justin Zhang, 18, Junior, Neeyanth Kopparapu, 15, Freshman, Kavya Kopparapu, 17, Junior, School: Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Ria Galanos
- VERMONT**
- Northfield, USVT50, Vermont Science, Technology, Engineering and Mathematics Fair*
- BEHA063** **The Effects of Growing Up Multilingual on Cognitive Thinking**  
Vera Escaja-Heiss, 16, Sophomore, School: South Burlington High School, South Burlington, Vermont, T: Nathaniel Moore
- ROBO045** **Maze Solving Optimization through Genetic Programming**  
Trevor Michael Houchens, 18, Senior, School: South Burlington High School, South Burlington, Vermont, T: Nathaniel Moore
- ROBO046** **Utilizing Artificial Neural Networks in Data Analysis**  
## Vincent Paul August Moeykens, 18, Junior, School: Windsor High School, Windsor, Vermont, T: Jeffery Bache
- WASHINGTON**
- Kennewick, USWA01, Mid-Columbia Regional Science and Engineering Fair*
- BMED054** **Reversing High Glucose Levels through a Novel Approach: *C. elegans* as a Model for Treating Diabetes**  
Abrağ Nadir Nassar, 18, Junior, School: Sunnyside Senior High School, Sunnyside, Washington, T: Joyce Stark
- ROBO025** **Utilizing Machine Learning Techniques to Identify Cancerous Skin Lesions**  
Christopher Thomas Kang, 15, Sophomore, School: Hanford High School, Richland, Washington, T: Brian Palmer
- Tacoma, USWA02, South Sound Regional Science and Engineering Fair*

- CELL033** **A Novel Approach to Understanding Cancer: The Effects of Antitumor Agents in P53 Gene Expression on the Early Development of Zebrafish Embryos**  
Ashlynn Anne Gallagher, 18, Junior, School: W.F. West High School, Chehalis, Washington, T: Matthew Bremgartner
- ENBM044** **MyHealth: A Novel Wearable Solution for Early Detection and Monitoring of Parkinson's Disease and a Transformation from Subjective to Quantifiable Testing**  
###  
Surabhi Gopal Mundada, 18, Senior, School: Olympia High School, Olympia, Washington, T: Brian Wright
- ROBO024** **An Early Myocardial Infarction Detection System Using Complex Artificial Intelligence**  
Abhinav Gundrala, 16, Sophomore, School: Olympia High School, Olympia, Washington, T: Alex Stienkamp
- Bellevue, USWA03, Central Sound Regional Science & Engineering Fair*
- CBIO014** **The Application of Machine Learning Algorithms on EEG Data to Predict and Detect Epileptic Seizures**  
Neha Hulkund, 17, Junior, School: Tesla STEM High School, Redmond, Washington, T: Kate Allender
- SOFT022** **Temporal Amplification of Photoplethysmographic and Biometric Signals Hidden in Video Streams for Contactless Monitoring of Cardiovascular Health and Identity Authentication**  
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Eshika Saxena, 16, Sophomore, School: Interlake High School, Bellevue, Washington, T: Edward Wang
- Vancouver, USWA04, Southwest Washington Science and Engineering Fair*
- BMED055** **Ototoxic Drug Levels in Cochlear Tissues: Validating Machine Segmentation of Drug Uptake in Individual Cells Types of the Cochlea in Confocal Images**  
Tsering Shola, 16, Sophomore, School: Camas High School, Camas, Washington, T: Kimberly Newman
- EGPH018** **The Development of a Renewable Energy Phone Case**  
Jack Harrison Kolosvary, 18, Junior, School: Columbia River High School, Vancouver, Washington, T: Gwendolyn Davis
- Spokane, USWA05, The Spokane STEMposium*
- CHEM044** **Water Spherification: Making Water Transportation and Consumption More Efficient for Astronauts While in Space**  
Faith Marie King, 19, Senior, School: Joel E. Ferris High School, Spokane, Washington, T: Darci Hastings
- EAEV049** **Investigating the Presence of Microplastics in the Gastrointestinal Tract of Mountain Whitefish in the Spokane River**  
Isaac William Caruso, 18, Senior, School: Lewis & Clark High School, Spokane, Washington, T: Eric Strate
- Bremerton, USWA50, Washington State Science and Engineering Fair*
- CBIO039** **A Novel Machine Learning Approach Using Convolutional Neural Networks to Identify Melanoma**  
Savitha Srinivasan, 15, Freshman, School: Interlake High School, Bellevue, Washington, T: Beth Gatewood
- CELL046** **Neurotrophin Receptor Isoform Expression Analysis in Breast Invasive Carcinoma: Potential Considerations for Targeted Therapy and Precision Medicine**  
Vaishnavi Phadnis, 17, Junior, School: Nikola Tesla STEM High School, Redmond, Washington, T: Kate Allender
- EGCH033** **Development of a Novel Catalyst for the More Efficient Conversion of CO<sub>2</sub> in H<sub>2</sub>O to Sustainably Produce Hydrocarbons as an Alternative Form of Energy**  
Aditi Kumar, 17, Junior, School: Timberline High School, Lacey, Washington, T: Matthew Vandewark
- EGCH034** **Designing a Thermostable Cellobiohydrolase: A Novel Approach to Sustainable Ethanol Production**  
Sagarika Samavedi, 16, Sophomore, School: Interlake High School, Bellevue, Washington, T: Alexandra Corella

- MATS052** **Exploring Piezoelectric Properties of Atomically Thin WSe<sub>2</sub> for 2-Dimensional Nanoelectromechanical Systems**  
Terrance Li, 17, Sophomore, School: Newport Senior High School, Bellevue, Washington, T: Xiaodong Xu
- MATS053** **Molecular Dynamics Simulation and Experimental Fabrication of Nanoporous Graphene Membranes for Optimal Water Permeability in Reverse Osmosis Desalination**  
Apoorv Khandelwal, 18, Senior, School: Nikola Tesla STEM High School, Redmond, Washington, T: Kate Allender
- WISCONSIN**  
*Glendale, USWI02, Nicolet Science and Engineering Fair*
- SOFT017T** **Traffic Congestion Reduction Using Ant Colony Optimization**  
# Julian Luke Nazareth#, 19, Senior, Neville Nazareth#, 16, Sophomore, School: Nicolet High School, Glendale, Wisconsin, T: Stephanie Deering
- Milwaukee, USWI03, University School of Milwaukee - Science Fair*
- BEHA034T** **Political Trends: Examining the Future of Politics**  
Kailas Shekhar Sane, 19, Senior, Veda S. Sane, 16, Sophomore, School: University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
- MCRO011** **Establishment of a Working System for Engineering Programmable Bacteriophages**  
# Candace Walther, 18, Senior, School: University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
- Madison, USWI04, Capital Science and Engineering Fair*
- MCRO018** **A Comparative Methodology: Processing Laryngotracheal Swabs for 16S rRNA Gene Sequencing**  
Madhu Gowda, 18, Senior, School: Middleton High School, Middleton, Wisconsin, T: Cherie Hellenbrand
- Milwaukee, USWI50, Badger State Science and Engineering Fair*
- BMED022** **Crucial Role of Telomerase Activity in Mitigation of Chemotherapeutic/Cardiovascular Disease Induced Reactive Oxygen Species Mediated Oxidative Stress and Reconstitution of Microvascular (Endothelial) Function**  
# Nabeel Jami Quryshi, 17, Junior, School: University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
- ENBM051T** **Nanotopographical Control of Dental Pulp Stem Cell Fate Using Phase Segregated PLA/PS Thin Films**  
Alice Guanyi Wu, 18, Senior, William Hu, Senior, 18, Katherine Chen Cao, 18, Senior, Schools: Half Hollow Hill High School West, Dix Hills, New York, Saratoga High School, Saratoga, California, Homestead High School, Mequon, Wisconsin, T: Michael Lake, Paul Robinson, Brett Bowers
- ENEV041** **Low-Cost Gravity Driven Filtration System Designed Using Iron Oxide Nanoparticle-Loaded PU Foam for Arsenic Removal from Polluted Water in Developing Countries**  
## Arundhati Pillai, 18, Senior, School: University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
- WEST VIRGINIA**  
*Keyser, USWV01, West Virginia Eastern Panhandle Regional High School Science Fair*
- ROBO011T** **The Development of an Intelligent and Dexterous Robotic Arm**  
Thomas Tran Anderson, 17, Junior, Ryan Christopher Gross#, 17, Junior, School: Spring Mills High School, Martinsburg, West Virginia, T: Jana Woolfer
- ROBO023** **Providing a Method for Neural Networks to Justify Their Conclusions in Both Prediction and Classification Problems**  
# Robert George Barrat, 18, Senior, School: Jefferson High School, Shenandoah Junction, West Virginia, T: David Price
- West Liberty, USWV03, West Liberty State University Regional Science and Engineering Fair*
- MCRO026** **Bee Propolis, the Natural Antibiotic**  
Kendrick Micheal Dobbs, 18, Senior, School: John Marshall High School, Glen Dale, West Virginia, T: Kathleen Loughman

*Fairmont, USWV50, West Virginia State Science and Engineering Fair*

- MATS062** **Can We Improve the Efficiency of Fiber-Optics?**  
Mason Chase Espinosa, 15, Freshman, School: Washington High School,  
Charles Town, West Virginia, T: Shane Price
- SOFT033T** **myCAST: A Personalized Cerebrovascular Accident Self Test**  
Swagat Bhattacharyya, 17, Junior, Michael Jarek Yan, 17, Junior, School:  
Morgantown High School, Morgantown, West Virginia, T: William Gibson

#### WYOMING

*Greybull, USWY01, Northern Wyoming District Science Fair*

- BMED005** **Potential Neuronal Toxicity Associated with Cellular Exposure to Electronic Cigarette Fluids**  
Bayley Madison Burns, 17, Junior, School: Greybull High School, Greybull,  
Wyoming, T: Joel Kuper
- ENEV008** **Evaluating the Effectiveness of a Hydrogel/Fertilizer Matrix to Improve Seed Germination**  
# Dante Arther Sylvester, 18, Senior, School: Greybull High School, Greybull,  
Wyoming, T: Joel Kuper

*Laramie, USWY50, Wyoming State Science Fair*

- ANIM058** **The Rate of Embryonic Development in *Oncorhynchus mykiss* When Exposed to Heavy Metal Solutions**  
Colton Rainier Curtis, 18, Senior, School: Meeteetse High School, Meeteetse,  
Wyoming, T: Mike Power
- EAEV027** **Determination of Soil VOC Content due to Coal Dust Deposition along Major Railroad Transportation Routes**  
Sierra Nicole Spears, 17, Junior, School: Lingle-Fort Laramie High School,  
Lingle, Wyoming, T: Brandon Gifford
- MCRO036** **Shifting Sun vs. Putrid *Pilobolus***  
# Jennel Mead, 18, Senior, School: Cheyenne South High School, Cheyenne,  
Wyoming, T: Shannon Cunningham
- ROBO014** **Implementing New Methods of Prosthetic Control**  
# Qingfeng Li, 16, Sophomore, School: Laramie High School, Laramie, Wyoming,  
T: Erin Klauk

#### UNITED STATES VIRGIN ISLANDS

*St. Croix, TEVI02, Good Hope Country Day School Science Fair*

- BMED073** **Tacedinaline-Induced Expression of LL37: A Novel Approach to Treating Tuberculosis Infection**  
## Kira Griffith, 17, Senior, School: Good Hope Country Day School, Kingshill,  
St. Croix, Virgin Islands, T: Jane Coles
- EGPH034** **Driving on Sunshine**  
Kieran Hensleigh Walter-Sundaram, 16, Freshman, School: Good Hope  
Country Day School, Kingshill, Virgin Islands, T: Mary Coles

#### URUGUAY

*Montevideo, URY001, Feria Nacional de Clubes de Ciencia*

- BMED008T** **Obesity in Adults, Sedentary Lifestyle and Technology**  
Antonella Clara Pascual, 18, Senior, Valentina Vila, 18, Senior, School: Liceo  
No. 1 "Mario W. Long," Young, Río Negro, Uruguay, T: Lorna Romero
- EAEV004T** **Analysis of Possible Pollution in the San Francisco Stream**  
Irene Dahiana Caballero, 17, Freshman, Nicolas Alejandro Hernandez, 18,  
Senior, School: Escuela Tecnica Minas, Minas, Lavalleja, Uruguay,  
T: Solange Curbelo
- ENMC007T** **Construction of an Electric Reel to Collect a Strand of Electric Shepherd**  
Lucia Fuentes, 20, Senior, Sabrina Lujan Cornu, 19, Senior, School: Agrarian  
School of Rosario, Rosario, Colonia, Uruguay, T: Pedro Menéndez

#### VIET NAM

*Ha Noi City, VNM001, Ha Noi Science Fair*

- BMED081T** **Study on the Radio-Protection of Curcumin-Encapsulated Nanoliposomes on Human Lymphocytes**

- Xuan Quynh Thi Nguyen, 17, Junior, Tien Thuy Mai, 17, Junior, School: Thang Long High School for the Gifted, Da Lat, Lam Dong, Viet Nam, T: Hiep Nguyen
- CHEM048T** **Zerumbone Derivatives: New Candidates for Cancer Treatment**  
Mai Phuong Do, 17, Junior, Quan Do Minh Bui, 18, Senior, School: Tran Phu Gifted High School, Hai Phong City, Viet Nam, T: Ly Nguyen
- CHEM049T** **Design, Synthesis and Bioevaluation of Novel Hydroxamic Acids Incorporating 2-Oxoindoline Moiety as Histone Deacetylase Inhibitors and Anticancer Agents**  
Khue Dan Tran, 17, Junior, School: High School for Gifted Students, National University-Hanoi, Hanoi, T: Nam Nguyen Nam Anh Thi Vu, 17, Junior, School: High School for Gifted Students, Hanoi University of Science, Hanoi, Viet Nam, T: Nam Nguyen
- EBED037T** **MIND HAND: A Comprehensive Solution Supports Two-Way Communication for the Deaf Mute**  
Thao Chi Hien Nguyen, 17, Junior, Trang Ngan Thi Tran, 17, Junior, School: Tran Phu Gifted High School, Hai Phong, Viet Nam, T: Ly Nguyen
- EBED038T** **Translating Glove for the Deaf-Mute Compatible with Smartphones**  
Minh Duc Hoang Chu, 17, Junior, Tan Thien Pham, 17, Junior, School: Le Hong Phong High School for the Gifted, Ho Chi Minh City, Viet Nam, T: Hung Vo
- ROBO035** **Prosthetic Arm Controlled by Legs – Transmitter for Disabled People**  
Huy Pham, 17, Junior, School: Quang Tri Town High School, Quang Tri Town, Viet Nam, T: Long Le
- SOFT039** **Chemoscope: An Android Application Integrated Augmented Reality and Mixed Reality to Assist Chemistry Learners**  
Thu Anh Tran Thi, 18, Senior, School: Bao Loc High School for the Gifted, Bao Loc, Lam Dong, Viet Nam, T: Trang Truong Nguyen
- TMED040T** **Development of Novel Method Using RNA Template for Detection of Mutation with Superior Sensitivity**  
Ngoc Minh Thi Pham, 17, Junior, Duc Trong Nguyen, 18, Senior, School: Hanoi–Amsterdam High School for the Gifted, Hanoi, Viet Nam, T: Tho Ho
- ZIMBABWE**  
*Harare, ZWE001, Zimbabwe National Science Fair*
- EAEV006** **Investigating Flood Warning Systems**  
Ray Mutsahuni, 13, Freshman, School: Irene Christian College, Harare, Zimbabwe, T: Ronald Churu
- EGCH001** **Potatoes Are the Ultimate Solution to our Electricity Problems in Zimbabwe**  
Pelagia Maria Majoni, 18, Senior, School: Queen Elizabeth Girls High School, Harare, Zimbabwe, T: Memory Mutema
- PLNT007** **The Best Affordable Alternative Nanofertiliser**  
Carol van Rooyen, 18, Senior, School: Queen Elizabeth Girls High School, Harare, Zimbabwe, T: Memory Mutema

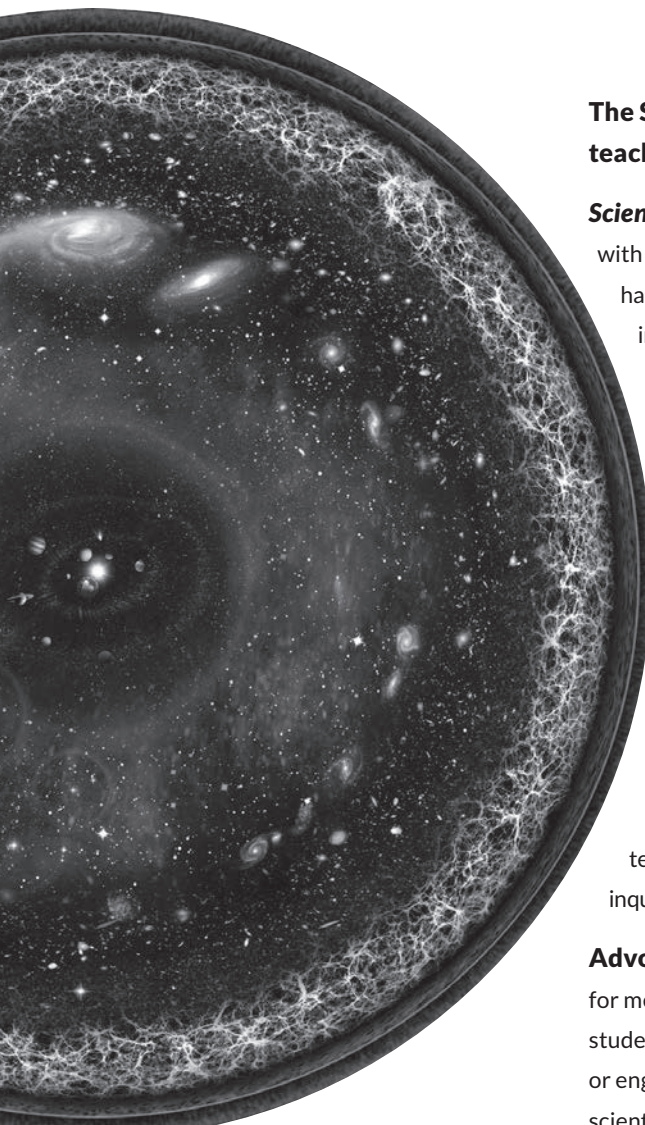








# Science Inspires



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**UNIVERSAL MAP** This diagram, made up of stitched together NASA imagery, is essentially a map of the observable universe. The solar system is at center. The scale changes as you move outward so that the distances depicted toward the edge of the circle are enormous.

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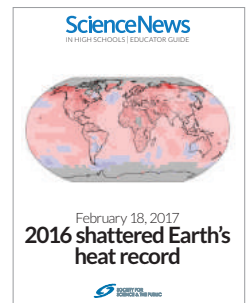


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