

# 2020 TRI COUNTY SCIENCE & TECHNOLOGY VIRTUAL FAIR

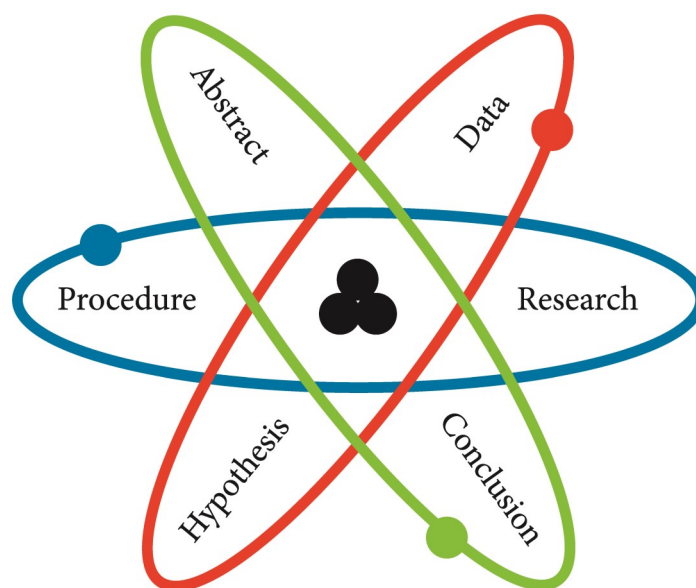


*Exhibitors Grades K–12 From*  
Westchester <> Putnam <> Rockland  
organized by

**The Putnam Children's Discovery Center, Inc.**

Science Teachers Association of NYS (Westchester Section)

*[www.DiscoveryCtr.org](http://www.DiscoveryCtr.org)*



**Judge Edith Miller Excellence in Education**

**Susan Schaell Handelman Award for  
Scholastic Excellence in Science & Technology**

**The Newman Family**

Gem Level: Sponsorship: *Bronze*

GRAND SPONSOR  
**PepsiCo Global R&D**



## A few words about COVID-19

Wow – could anyone even imagine?

I am incredibly pleased that we were able to hold a competition during this crisis and keep at least one event students planned on in their lives available for them. I would like to thank the parents that were thrust into the role of principal, teacher, playground monitor, cafeteria aide and more. I would like to thank the teachers that quickly adopted to online teaching.

There were schools that worked with me on “how” to get their students selected to come to Tri County since they had not held their Fairs. In life, there are those that throw their hands up in defeat and those that look for solutions and, in an emergency, this is magnified. So, I applaud the schools that looked for solutions to choose students to come to us and to the many volunteers and judges that decided to be a part of the solution.

Living through a pandemic is scary by all measures. And to know throughout history we have had epidemics and pandemics does not make living in the now feel any better. To know this will not be the last does not soothe the soul. However, knowing that we were able to mobilize field hospitals and military floating hospitals was incredible. Watching companies that made booze switch to making hand sanitizer, the auto industry making ventilators or garment industries making masks was a sight to see. Knowing that as a society we were willing to shelter in place to save each other was unbelievably humbling to me.

In my youth I worked with troubled teens and only babysat for kids from divorced homes. Divorce and blended extended families were not as commonplace “back then”. So, while we were advised to shelter in place, my mind immediately went to the child whose escape is going to school, getting to an after-school activity and in some cases their safer space is outside the home. These along with other issues are unintended consequences of shelter in place. I hope that in addition to studying the medical side of this equation that we also study the social-economic and psychological ramifications.

Out of the ashes of crisis are achievements. We need to be mindful that history always has disasters and unfortunately these tragedies take lives. But these misfortunes also inspire creativity, the ability to adapt and new and exciting business models will emerge. In a year from now, ten years from now we will learn much more about the virus, its origins and solutions or cures. There is so much to learn; the biological, psychological, mathematical probabilities and likelihoods.

The focus on research going forward is that it is rooted in facts as we know them and to be prepared for those to evolve and change over time. To remember that a hypothesis is the beginning of an educated guess and can be proven wrong. Many scientists never learned how successful they were in their lifetimes. Many had numerous failures and yet their work lives on in infamy. Now more than ever we need scientists, doctors, psychologists, nurses, lab techs, engineers and more. We look forward to seeing your work in the future and thank you for being a part of this year’s virtual fair.

## A FEW WORDS ABOUT THE ORGANIZERS

The Tri County Science Technology Fair was founded in 1990 by The Putnam Children's Discovery Center, a volunteer organization. The original Fair was a countywide competition for Putnam County. In 1993 the Fair expanded to a regional Fair to include Westchester and Rockland Counties. The Fair's primary purpose is to reward children who have an interest in science, math and technology. Public, private and home schooled students from the three counties are welcome to participate in the Fair, A STEM Activity.

Elementary and middle school students gain entry to our Fair by placing in a Science & Technology Fair organized by their school. Home schooled students are entered based on their parent or the person in charge of their home schooling. The local organizers in the public or private schools determine who will continue on to our Fair. It is recommended that they encourage their first or second place winners. They can send up to twelve exhibits in the elementary and middle school divisions. There are nine categories for K-8 *Biology, Chemistry, Environment, Earth/Space, Engineering/Technology, Health & Medicine, Math/Computers, Physics, & Psychology*. On the High School level two categories have been dissected into two: *Health & Medicine is now: Health & Nutrition; Medicine and Medical Science & Technology. Psychology is now: Clinical/ Social Psychology; Physiological/Experimental Psychology.*

To view the rules visit **www.DiscoveryCtr.org**. For the purposes of our Fair the Divisions are: Division "E" grades K-4 / Division "M" grades 5-8 Division "H" grades 9-12. Schools that cross into two divisions can send 12 exhibits grades K-4 and 12 within grades 5-8 and 18 within grades 9-12. High School students are "direct" entered by either their principal or science department chairperson, or District STEM coordinator. The majority of high school students presenting at our Fair have opted for individual empirical or theoretical research projects as these projects meet the eligibility requirements for the NYS level. Three students and six alternates on the high school level will be selected to continue on to the NYS Science Congress. In the Middle School Division several students may be selected for further competition at the Broadcom Masters a National competition organized by Society for Science & the Public (SSP).

The Center wishes to thank our sponsors, the volunteers, committee leaders, and the endless hours of dedication by the presenting students and their families, without whose support there would be no Fair.

Beware of the words "settled science" as there is no such thing as "settled science". Science is always evolving. So if you believe something is "different" explore it, try to defy it and see where that road takes you. Maybe it takes you back to "accepted science." But we will only learn when scientists aim to prove or disprove theories. Please continue to explore, our future depends on it.

Winners from the 2020 Tri County Virtual Fair available **www.DiscoveryCtr.org** after May 1.

Your school can have a fun Hands on Science Program complete with an educational magic show offered on Saturdays or Sundays for Jewish Day Schools. For complete details visit online at [www.DiscoveryCtr.org](http://www.DiscoveryCtr.org) or call 845 621-1260



## SPOTLIGHT ON VOLUNTEERISM

**Matthew Newman**

**Matthew is one of the founders of Flambé Comedy a Sketch Comedy troupe on YouTube & Facebook.**  
We encourage ADULTS only to view Flambe Comedy. Although the following are more PG in nature "THE MISSION IS ACTUALLY IMPOSSIBLE", "DAVE", "GUN KNIFE FIGHT"



Matthew Newman is an actor, writer, comedian and a graduate of Emerson College class of 2015 Screenwriting/Media Production. Other credits include Writer's Asst. -- Gayme Show!, Quibi and Improv: Groundlings Theatre & Upright Citizen's Brigade. He is a founder, writer and actor on Flambé Comedy, a group that garnered 250,000 views on Funny or Die's Facebook Live page. He won an EVVY award for Outstanding Writing in Television, and hosted the 33rd Annual EVVY Awards — which took home the College EMMY for Outstanding Variety Show. Matthew worked for a time at the Colbert Report and FX Network. In College he was part of Jimmy's Traveling All Stars (2011-2015) aka JTA Comedy. **Pole-Ice Man** is a great adult sketch to watch on JTA Comedy, found on YouTube. Matthew also was an anchor for 2 years on Breaking News News on the Emerson Channel, a news parody show similar to SNL news.

He has been volunteering since he was 5 years old (maybe earlier). Mostly because he is the son of Fair founder Janice Newman and grandson of Judge Edith Miller an Award given out at the Fair. Despite the fact that Matthew lives in California, he flies up to help with the Fair and helps out via email and Skype throughout the year.

For a fast peek at some of Matthew's work Type in MATTHEW NEWMAN REEL on YouTube.

Or <https://www.youtube.com/watch?v=be2YpuCr5LU> or for full length sketches go to Flambé! Comedy on YouTube or Facebook.

## JUDGES TEAM

Frank Iacopelli

Mark Kramer

Amanda Iacopelli

Christina Iacopelli

Dean Gallea

Dr. Michael Saccucci

Shawon Khan

Dr. Em Adams

Dr. AnnMarie DelliPizzi

Dr. Melissa Huey

Ms. Christine McGinn

Mr. Sean Simpson

Dr. Nadine Agosta

Dr. Kristie deRuiter

Dr. Teresa Hurley

Mr. Patrick Meaney

Mr. Deepak Singh

Prof. Barbara Allen-Lyall

Dr. Gene DiResta

Dr. Sushumna Iruvanti

Dr. Evan Merkhofer

Mr. Michael Sperling

Ms. Katherine Amberg-Johnson

Prof. Kristin Dragos

Dr. David Jameson

Dr. April Miller

Dr. Carolyn Springer

Ms. Francine Antonucci

Evans Eboigbodin

Mr. Chris Kalish

Dr. Mary Mitchell

Mrs. Annette Stabile-Torchetti

Ms. Maelle Aubry

Mrs. Alexandra Echegaray

Mr. Nick Kapoor

Ms. Sally Mitchell

Mr. Spencer Sullivan

Dr. Indranil Basu

Ms. Barbara Edelheit

Mr. Marc Karell

Mr. Steven Moskowitz

Mr. Sai Sunku

Rita Beisel

Mr. Adam Egelberg

Dr. Mary Kelly

Monimala Mukherjee

Mr. Michael Swayze

Grace Bonanno

Prof. Jake Eubank

Dr. Hongduck Kim

Dr. Amie Norton

Ms. Amadea Toutoungis

Mr. Giuseppe Bongiorno

Dr. Victor Ferastraoaru

Mr. Mark Kramer

Dr. Kevin O'Donovan

Dr. Natalie Umling

Dr. Anthony Bucci

Dr. Silvia Finnemann

Mr. Michael Kuepfert

Ms. Jessie Oehrlein

Mrs. Judy Vigar

Dr. Nicole Calma-Roddin

Dr. Jay Fleischman

Mr. Kevin Kwock

Mr. Arismendy Ovalle

Dr. Ruvanee Vilhauer

Ms. Maria Carozza

Dr. Faith Florer

Mr. John LaMagna

Dr. Christopher Pappas

Dr. Matthew Volovski

Dr. Alessandra Carriero

Dr. Christina Fojas

Dr. Zachary Lamport

Mrs. Reina Pascal

Dr. Bob Vosatka

Dr. Jiawei Chen

Dr. Nathan George

Mr. Jim Laredo

Kathleen Pecoraro

Dr. Linnea Vose

Dr. Ali Chettih

Dr. Neha Gogia

Prof. John Leylegian

Prof. Manfred Philipp

Dr. Christopher Walinski

Ms. Genevieve Coffey

Dr. Randy Goldberg

Dr. John Lucassen

Dr. Elisabeth Ploran

Mr. James Wasvary

Marie Cole

Prof. Dorian Goldman

Dr. Radhashree Maitra

Dr. Sher Poudel

Mr. Jason Wertz

Mr. Mark Connelly

Dr. Jennifer Goldwasser

Dr. Jessica Malberg

Dr. Ruth Propper

Mr. Chengbo Yao

Mr. Timothy Connelly

Ms. Carolyn Graverson

Mr. Gino Malpartida

Dr. Malini Ravi

Dr. Andrew Ying

Ms. Cathy Culver

Dr. Amy Green

Mr. Nicholas Mannarino

Prof. John Regan

Prof. Marilyn Zeppetelli

Prof. Toby Cumberbatch

Mr. Nitin Gupta

Dr. Christina Marini

Dr. Warren Rosenberg

Dr. Meng Zhang

Mrs. Lynn Cunha

Mr. Malcolm Hazel

Mrs. Lauren Martignette

Ms. Christine Ross

Christina Daniels

Mr. Steve Herman

David Mawdsley

Dr. Shicheng Shi

Dr. Meghan De Witt

Ms. Carla Hoge

Mr. Don Mays

Dr. Julian Silverman

# JUDGES

## JUDGES TEAM

Frank Iacopelli

Mark Kramer

Amanda Iacopelli

Christina Iacopelli

Dean Gallea

Dr. Michael Saccucci

Shawon Khan

Adelphi University

Albert Einstein College of Medicine

American Museum of Natural History

Blind Brook High School

BNY Mellon

Cardinal Spellman High School

CBRE @ Google

Clever Devices

Climate Change & Environmental  
Services

Collado Engineering

Columbia University

ConEdison

Consumer Reports

CUNY City College of New York

DAOS Consulting, LLC

Columbia University

Deskew Technologies, LLC

Diffusion LLC

DLB Associates

Dominican College

Edgewell Personal Care

Fairfield University

Fordham University

Fox Vein and Vascular

Glenville Capital Management LLC

Hackley School

Harvard University

Hofstra University

Hudson Scenic Studio, Inc.

IBM

Icahn School of Medicine  
at Mount Sinai

ICL-IP America

Independent Consultant

Indigo Education Company

Inzen Therapeutics

Jamaica Hospital Medical Center

Jennifer Goldwasser, MD PLLC

Johns Hopkins University

LCBC

Lehman College

Lewis University

MadMod Computing

Manhattan College

Manhattanville College

Maria Regina High School

Marist College

Maryknoll Fathers and Brothers  
Health Services

McGraw Hill

Microflow Associates

Montclair State University

Montefiore Health Systems

Mount Saint Mary College  
School of Nursing

Nestle Health Science

New York Institute of Technology

New York Medical College

New York University

Nitto, Inc.

Novartis

NYC Board of Education

Otis Elevator

PepsiCo

Pierce College

Proteus Advisers LLC

Red Hat

Retina & Laser Consultants

Rye High School

Rye Neck High School

Samsung Electronics America

Singular Anesthesia Services

St. John's University

St. Thomas Aquinas College

Stony Brook University

Takeda Pharmaceuticals

Texas A&M University-Kingsville

The Bassett Consulting Group

The City College of New York

The College of Westchester

The Cooper Union

TJ MAXX

Touro College of Dental Medicine

United States Military Academy

United States Naval Academy

USDA

WeatherMark LLC

West Pharmaceutical Services

Westchester Community College

Westchester Medical Center

Yale University

Yeshiva University

## JUDGES COMPANIES



## Meet the Keynote Speaker

### JUDY VIGAR

*Vice President R & D Global Beverage Platforms*

Judy is a 18 year veteran in PepsiCo R & D and a 37 year veteran in the food industry. She has led R&D for the development and launch of many new beverage products around the world for Gatorade, Tropicana, and other PepsiCo beverage brands. She has expertise in Non Carbonated Beverages, as well as Engineering and Manufacturing, particularly, in juice based beverages.

While at PepsiCo, Judy spent close to 4 years in Europe. While there, she created and led a Beverages R&D satellite lab, and was part of the acquisition team for two large eastern European beverage companies. Judy joined PepsiCo in 2002, following almost 19 years with Procter and Gamble in Food and Beverage Manufacturing and PD. She holds two patents in the area of chelating agent technology. She graduated magna cum laude from Brown University in 1983, with a Bachelor of Science degree in Electrical Engineering and is a member of Tau Beta Pi. Judy is a certified Project Management Professional through PMI and is currently working on her Masters Degree in Food Science at Rutgers University.

Judy just celebrated her 28th wedding anniversary with her husband, Jim and they have one 19year old son, James. They enjoy boating, swimming, camping and travelling.

**WE STRONGLY SUGGEST WATCHING JUDY VIGAR during our AWARDS CEREMONY ONLINE**

<https://discoveryctr.org/tri-county-science-and-technology-fair/> Click on Awards Ceremony and go about 13 minutes in to listen to her.

She delivered a phenomenal Keynote Address

## ELEMENTARY SCHOOL

For purposes of the Fair Elementary is grades K-4

*We are especially impressed that these two projects came to us. This year was not easy to say the least and the fact that these three students chose to rise to the challenge was particularly heartwarming.*

### CHEMISTRY

|                                |                              |              |
|--------------------------------|------------------------------|--------------|
| Campbell Magnan, Elise Rainert | The Fastest Way to Ice Cream | F.E. Bellows |
|--------------------------------|------------------------------|--------------|

### PHYSICS

|                  |                 |                |
|------------------|-----------------|----------------|
| Lia Seelenfreund | Magic Microwave | Daniel Webster |
|------------------|-----------------|----------------|



# SPECIAL AWARDS FOR MIDDLE SCHOOL (grades 5-8)

## Susan Schaell Handelman Award for Scholastic Excellence in Science & Technology

*The best Middle School with the highest overall average among all other Middle Schools.*



**Susan Schaell Handelman** has been an educator in private and public schools in CT and NY, and a volunteer for many organizations including the PCDC. Being an R.N. and teacher, Family Science Nights included Susan with the 3D human body puzzles and eye & ear models, sharing anatomy and physiology facts with curious children and their chaperones. She arranged the initiation of the Hands On Science classes at the Kent Schools in Carmel, NY to provide day and evening enrichment workshops, which attracted participants from other districts as well.

Originating from a small, rural community in Illinois, Susan graduated from Northwestern University, having received a full academic scholarship to study childhood development and education. A Master of Science degree from NY Medical College and Pace led to Nursing Board Certifications as a Family Nurse Practitioner and also Women's Health Care Nurse Practitioner ("pioneer" positions). She was also a Certified Electrologist.

Though now retired these ongoing educational, science, and health interests inspired a special appreciation and support for the quality programs PCDC brings to communities. She has recruited funding, teachers, judges, shared PCDC judging protocols, and obbied for science fair publicity resulting in increased participation.

Her late husband James, and sons Zach and Jed participated in PCDC endeavors also. Grandson Asher is expected to continue the tradition.

To make a donation, please make checks payable to PCDC and memo SSH or Susan Schaell Handelman Award for Scholastic Excellence in Science & Technology. Mail to PCDC PO Box 222 Carmel, NY 10512.

Or use PayPal: JNewman@DiscoveryCtr.org



## Judge Edith Miller Excellence in Education

*Award for top overall MS score*

Edith Lorraine Meyer was born into poverty on December 3, 1929. Her parents Earl & Florence Meyer were considered the working poor. She lived with her sister Yvonne in a one bedroom apartment with a bath tub in the kitchen. It was one of the few flats to have a toilet inside the apartment. She brought herself from a place of poverty to a place of prominence by committing to school and education. Realizing the only way out of the cycle of poverty was college; she walked to school with cardboard in her shoes. This saved her the nickel bus fare so that she could attend Hunter College. She went on to St John's Law School and graduated as the only woman in her class. After passing the bar exam, she decided to focus on having a family. With a law degree under her belt she knew she would never be poor again. Five years later she started a job at The New York City Legal Aid Society where she could assist people who were less fortunate. She quickly rose to the head of the office. She went on and was appointed by Mayor Lindsay to the Family Court of NY, where she became the administrative judge. During her time in family court, she was the presiding Judge on the famous Willie Bosket case which became instrumental in helping to change NYS law. The ramifications of this case resulted in children under age 16 committing heinous crimes could be tried as adults. The moment that made her proudest was becoming the FIRST woman to be appointed to the Appellate Term of the NYS Supreme Court. Judge Edith Miller passed on to her children, Brian and Janice the importance of education and because of this, Janice, her daughter, founder of The Putnam Children's Discovery Center and the founder of the Tri County Science & Technology Fair created a fund in her honor. The Discovery Center annually hosts the Tri County Science & Technology Fair. The first recipient of this award was in 2005. The middle school exhibit with the highest score receives The Judge Edith Miller Excellence in Education Award. Judge Miller is survived by her two children Janice & Brian and three grandchildren, Michael, Mark & Matthew and great grandchildren, Jasmine and Jace.

To contribute use PayPal JNewman@DiscoveryCtr.org or checks payable to PCDC memo: JEM PO Box 222 Carmel, NY 10512



# MIDDLE SCHOOL

For purposes of the Fair Middle School Division is for Grades 5-8

Students grades 6,7,8 are eligible for selection for further competition at **BROADCOM MASTERS** in light of Broadcom changing their criteria we have two new Awards of Distinction for 2020  
**Best of Fair Achievement Award** for top 10% of the MS Fair & **Middle School Merit in Science & Technology** for top 11-18% in grades 6,7 and 8.

## There are two Special Awards for Middle School:

**Judge Edith Miller Excellence in Education** for highest score

**Susan Schaell Handelman Award for Scholastic Excellence in Science & Technology** The best Middle School with the highest overall average among all other Middle Schools.

### BIOLOGY

|   |   |                          |
|---|---|--------------------------|
| <b>Irene Basu</b>                       | The antibacterial effect of m"Ag" nificent tiny particles                   | <i>Pelham MS</i>         |
| <b>Sonia Eddolls and Melanie Pujols</b> | Does the breed of Betta Fish affect its intelligence? YOU BETTA BELIEVE IT! | <i>Mildred E Strang</i>  |
| <b>Beverly Kang</b>                     | Want Spore Knowledge?   | <i>Louis M Klein MS</i>  |
| <b>Maria Kholmanskikh and Anqi Wang</b> | Mouthwash vs. Toothpaste  | <i>Farragut MS</i>       |
| <b>Ayva Rivard and Macey Rivard</b>     | Family Fingerprints   | <i>George Fischer MS</i> |
| <b>Sarah Rodriguez</b>                  | Effect of pH on plant growth  | <i>Louis M Klein MS</i>  |
| <b>Kyle Ryan</b>                        | Effect of Seasonal Light/dark Cycles on Algae                               | <i>Rye Neck MS</i>       |
| <b>Julie Van Roijen</b>                 | The effect of light on fine motor skills.                                   | <i>Rye Neck MS</i>       |

### CHEMISTRY

|   |   |                              |
|---|---|------------------------------|
| <b>Elle Barker and Valentina Ferrante</b> | Cupcake Chemistry   | <i>F.E. Bellows</i>          |
| <b>Aoife Bronnimann and Madeline Karl</b> | Shake it Up!  | <i>Rye Neck MS</i>           |
| <b>Violet Deluca</b>                      | Sweet Heart   | <i>George Fischer MS</i>     |
| <b>Cass Fabbie</b>                        | Bubble Mania  | <i>Mahopac MS</i>            |
| <b>Ella Grann</b>                         | What impact does Calcium Hydroxide (limestone) or Seagrass have on pH level in salt water to help with Ocean Acidification? | <i>Rye Neck MS</i>           |
| <b>Evan Lalak</b>                         | "A Pinch of Salt" The chemistry of salt   | <i>George Fischer MS</i>     |
| <b>Jake Morton</b>                        | The Ice Melter  | <i>Richard .J. Bailey</i>    |
| <b>Alissa Remeza</b>                      | Crystallization: the Effects of Freezing Rates on Ice Crystal Formation   | <i>Louis M Klein MS</i>      |
| <b>Giulia Rocha</b>                       | Rust Race   | <i>Pelham MS</i>             |
| <b>Hillary Schuldenfrei</b>               | Liquids Changing Color  | <i>Greenville Elementary</i> |



# MIDDLE SCHOOL

## EARTH / SPACE

|   |  |                              |
|---|--|------------------------------|
| <b>Charles Coscia and William Stobart</b> | Bean There, Done That  | <i>Pelham MS</i>             |
| <b>Pia Deluca</b>                         | Light Washed Water   | <i>George Fischer MS</i>     |
| <b>Megan O'Sullivan</b>                   | Think Before You Stink   | <i>George Fischer MS</i>     |
| <b>Ananya Shah</b>                        | The effect of stratospheric pressure, temperature, and UV-C radiation on the viability and biological properties of probiotic bacteria | <i>Greenville Elementary</i> |
| <b>Anastasia Villani</b>                  | Volcano - Danger or Safe Zone  | <i>Mahopac MS</i>            |

## ENGINEERING TECHNOLOGY

|  |   |                          |
|--|---|--------------------------|
| <b>Devesh Dubey</b>                          | The Effect of Solar Panel Rotation on Electricity Generation  | <i>Mildred E Strang</i>  |
| <b>Kaiyla Gard</b>                           | Recyclable Mini Air Conditioner   | <i>George Fischer MS</i> |
| <b>Charlotte Geary</b>                       | Heatable Gloves <a href="https://www.dropbox.com/s/tibydocrbxhvu90/Science%20Fair%20Charlotte%20Geary.pptx?dl=0">https://www.dropbox.com/s/tibydocrbxhvu90/Science%20Fair%20Charlotte%20Geary.pptx?dl=0</a> | <i>Rye Neck MS</i>       |
| <b>Stephen Karyotakis</b>                    | Hydraulic Crane   | <i>George Fischer MS</i> |
| <b>Yusuke Kimura</b>                         | ELECTROMAGNET   | <i>F.E. Bellows</i>      |
| <b>Lyra Kinderlerer and Adela Mihalcescu</b> | Water-powered vs. Electric Cars   | <i>Farragut MS</i>       |
| <b>Veebhu Shah</b>                           | The Reconstruction of Mars Rover Spirit by Using a Pneumatic Circuit Hydraulic System   | <i>Mildred E Strang</i>  |
| <b>Shreyas Singh</b>                         | Does the Bangladesh Eco -Cooler Work ?  | <i>Pelham MS</i>         |
| <b>Alexandra Wong</b>                        | Night Lights - The Power of the Fresnel Lens  | <i>Louis M Klein MS</i>  |

# MIDDLE SCHOOL

## ENVIRONMENT

|   |  |                       |
|---|--|-----------------------|
| Maya Barmecha, Vivian Zhang, Alyssa Zhu | Backyard Biome   | Greenville Elementary |
| James Biolchini                         | Good Vibes   | Mahopac MS            |
| Lilly Fauci                             | Growing Seeds with Aquaponics: Comparing 3 Types of Goldfish Food  | Rye Neck MS           |
| Benjamin Gold                           | Solar vs Wind Energy Powering Our Future                           | Louis M Klein MS      |
| Molly Hall                              | Are Flushable Wipes What They Say They Are?                        | George Fischer MS     |
| Sydney Healey and Iris Teodorescu       | The Effect Of Light Time On Germination And Early Growth Of Plants | F.E. Bellows          |
| Sophia Howard                           | The Microplastic Problem   | Mildred E Strang      |
| Lucie Paumier                           | The Impact of Carbon Dioxide on the Growth of Algae                | Rye Neck MS           |
| Madelena Rubenstein                     | Location Location Location A Bird Feeder Location Science Project  | F.E. Bellows          |
| Jasmine Simpson and Lily Simpson        | Ocean Acidification  | Pelham MS             |
| Juliet Tetrault and Ruby Wallach        | Saving the World One Roof at Time                                  | Farragut MS           |
| Julia Whalen                            | Are All Milks Created Equal?                                       | Mildred E Strang      |

## HEALTH MEDICINE

|   |  |                    |
|---|--|--------------------|
| Elena Adams                               | The Seven Senses of Autism   | Albert Leonard MS  |
| Sonali Browning                           | Does Playing Games on Your Phone Affect Your Blood Pressure?             | F.E. Bellows       |
| Sofia Lam, Akshyasree Ravi, Cynthia Zhang | iHeartRadio The effect of the genre of music on a human's blood pressure | Mildred E Strang   |
| Vanessa Nyambi                            | Can You Determine Taste by Sight?  | Richard .J. Bailey |
| Sinead O'Sullivan                         | Don't Mess With Me, I Attacked My Pancreas                               | George Fischer MS  |
| Hailey Otero                              | Germ Alert   | Mildred E Strang   |
| Aadita Roy                                | Five Second Rule: Myth or Fact?  | Pelham MS          |

## MATH COMPUTERS

|                       |   |                          |
|-----------------------|---|--------------------------|
| Sophia Buettner       | What factors drive a pandemic?  | Rye Neck MS              |
| Ronak Das             | Predictive Analytics of COVID-19  | Lakeland Copper Beech MS |
| Jacob Goldman-Wetzler | Machine Learning: How does the accuracy of a neural network change with the size of the training dataset? | Farragut MS              |
| Derek Ryan            | Medical Question Using BERT (Bi-directional Encoder Representations from Transformers)                    | Rye Neck MS              |
| Imaad Uzun            | The Value of Steals and Blocks in Basketball  | Albert Leonard MS        |

# MIDDLE SCHOOL

## PHYSICS

|   |  |                              |
|---|--|------------------------------|
| <b>Raheem Ahmed,<br/>Alexandro Guerrero-Martinez,</b> | Skydiving Into Science   | <i>Greenville Elementary</i> |
| <b>Julian Belfast</b>                                 | The Science of Sound   | <i>Albert Leonard MS</i>     |
| <b>Liam Bergerson</b>                                 | From da Vinci to da Glider   | <i>Mahopac MS</i>            |
| <b>Rajnandini Dey</b>                                 | Light: Wave or Particle?   | <i>Mildred E Strang</i>      |
| <b>Maya Grabowski and Katey Imperato</b>              | The Effect of Temperature on the Strength of Magnets and the Implications for Global Warming | <i>Mildred E Strang</i>      |
| <b>Aidan Grant</b>                                    | Determine How Antenna Length Affects Transmission Distance.                                  | <i>Louis M Klein MS</i>      |
| <b>Advait Huggahalli</b>                              | Mathematical Modeling of the Physical properties of Twisted Graphene                         | <i>Seven Bridges</i>         |
| <b>Ishana Kumar</b>                                   | The Physics of Color Perception: Insight into Benham's Disk                                  | <i>Robert E Bell</i>         |
| <b>Eric Li and Aditya Manjul</b>                      | Magnetic Linear Accelerator  | <i>Seely Place</i>           |
| <b>Avery Liao and Zoey Wang</b>                       | Optical Illusion: You don't see what you think you do  | <i>Seely Place</i>           |
| <b>James Palermo</b>                                  | How does the degree of the golf club affect the travel of the ball and it's launch angle.    | <i>Albert Leonard MS</i>     |
| <b>Kiran Schwaderer</b>                               | "Using LED Lights to Optimize Mung Bean Plant Growth"  | <i>Pelham MS</i>             |
| <b>Julia Steeves and Sarah Steeves</b>                | Parachute Science: Does Size Matter?   | <i>Rye Neck MS</i>           |
| <b>Owen Wagner</b>                                    | Surface Tension  | <i>F.E. Bellows</i>          |

## PSYCHOLOGY

|  |   |                          |
|--|---|--------------------------|
| <b>Sage Abbey</b>                        | Mindfulness and it's Impact on Attention. | <i>F.E. Bellows</i>      |
| <b>Valeria Barajas and Sofia Stastny</b> | Dog Intelligence based on Gender          | <i>Rye Neck MS</i>       |
| <b>Kathryn Kuznetsov</b>                 | How Color Affects Taste                   | <i>Pelham MS</i>         |
| <b>Isabel Palacios</b>                   | How does food affect your mood?           | <i>Rye Neck MS</i>       |
| <b>Samantha Ramirez</b>                  | Brainy Music                              | <i>Louis M Klein MS</i>  |
| <b>Grace Smith</b>                       | Puppy Dog                                 | <i>Farragut MS</i>       |
| <b>Juliette Thomas</b>                   | Testing Piaget's Theory of Conservation   | <i>Albert Leonard MS</i> |

## MARILYN REINER

### *SCIENCE IN EDUCATION FUND*

*Award for top overall HS score*



In the fall of 2004 we lost a strong supporter within our science community. Marilyn Reiner, a retired high school science teacher from Pearl River HS, passed away unexpectedly. She elevated the standards for high school students by creating an additional competition for the top nine students at the Tri County Science & Technology Fair. She was the president of the Westchester Section of The Science Teachers Association of New York State and worked tirelessly on the Tri County Science & Technology Fair.

In January 2005, The Putnam Children's Discovery Center started a fund in her honor, and the monies raised are utilized solely for science activities for children. The Discovery Center reaches children in Putnam, Rockland, Westchester, Dutchess and Orange counties in New York State. The programs that currently will benefit are: Family Science, a program that helps to take the mystery out of science; encourages parents not to be afraid of participating in their local science fairs. The program also offers science fair project suggestions and support when "you get stuck" during the project process. **Hands On Science**, a program (grades K-8) that takes place in school for students interested in science. The program offers several hands on activities where questioning is encouraged and the children work with a teacher in small, informal groups. Tri County Science & Technology Fair, an annual event for grades K-12. The best and the brightest students exhibit their projects, competing on a regional level. Three of the best researchers on the high school level go on to the NYS competitions.

To make a donation, please make checks payable to PCDC and memo MRSE or Marilyn Reiner Science in Education. Mail to PCDC PO Box 222 Carmel, NY 10512. Or use PayPal: JNewman@DiscoveryCtr.org



**Joseph Sciame** is a Fellow, Westchester section of the Science Teachers Association of New York State. He also serves as liaison of Bronx-Westchester STANYS to the Tri-County Science Fair, helping the top students at this competition move on to the State Science Congress.

WE STRONGLY SUGGEST WATCHING

**JOSEPH SCIAME** during our

**AWARDS CEREMONY ONLINE**

<https://discoveryctr.org/tri-county-science-and-technology-fair/>

Click on Awards Ceremony and go about an hour in to listen to him

## 30 YEARS STANYS & PCDC

The Tri County Science & Technology Fair has been in a fantastic partnership with The Science Teachers Association of NY (Westchester Section) since 1990 when the first idea of a regional Fair was born. It was then President Joanne Quinn and Executive Director Janice Newman who forged a friendship that would grow into the birth of the Discovery Center's Hands On Science program and the Tri County Science Technology Fair. Both are fantastic opportunities for the student looking for a successful career in science. When Joanne retired and moved to Florida she passed the torch to Marilyn Reiner. Through the years the alliance with STANYS has remained firm and we are pleased to have Joe Sciame, the current chair speak at our awards ceremony. Always delightful, funny and reminding students to keep science in their daily lives. It is with great pleasure that we recognize this alliance of 30 years in 2020.

# HIGH SCHOOL

For purposes of the Fair High School Division is for Grades 9-12

The top 4 students with be selected to continue to NYS Science Congress. *There will be 5 alternates in the event that any of the 4 cannot go.*

There is one Special Awards for HighSchool:

**Marilyn Reiner Science in Education** for highest score

## BIOLOGY

|                             |   |                         |
|-----------------------------|---|-------------------------|
| <b>Sam Aberman</b>          | Facilitation of an orthogonal IL-2 system for CAR T cell therapy through the novel knockout of the human IL-2 gene                                | <i>Byram Hills HS</i>   |
| <b>Melissa Amante</b>       | Volumetric Analysis of the Primary and Associative Auditory Cortex in Patients with Schizophrenia compared to Healthy Controls, P3 and ΔBPND      | <i>Somers HS</i>        |
| <b>Roya Azar</b>            | The Use of Va24 in VaKI Mice for Cancer Immunotherapy Research  | <i>Harrison HS</i>      |
| <b>Lauren Azrin</b>         | Pericyte Polarity is Dependent on Location Along the Retinal Vasculature  | <i>White Plains HS</i>  |
| <b>Isabella Berger</b>      | The Impact of Eusociality and Tongue Length on the Ability of Native Bees to Compete with Apis mellifera  | <i>Irvington HS</i>     |
| <b>Malik Aaron Bradford</b> | The Role of Anp32b In Metabolic Disease Caused by Endoplasmic Reticulum (ER) Stress   | <i>Ardsley HS</i>       |
| <b>Keerthana Chari</b>      | Negatively charged lipids promote Syt7 membrane binding and oligomerization   | <i>Scarsdale HS</i>     |
| <b>Nicholas D'Souza</b>     | Investigating the effect of Targeted Gene Deletions on the Expression of Mutant CDC42 in Saccharomyces cerevisiae for Potential Cancer Treatments | <i>Somers HS</i>        |
| <b>Peyton Disiena</b>       | Assessing the Use of AMY2B as a Novel Biomarker for Canine Metabolic Conditions   | <i>Somers HS</i>        |
| <b>Breanna Dorion</b>       | The Effect of Pitch on the Auditory Discrimination of Wolves  | <i>Putnam Valley HS</i> |
| <b>Catarina Duraes</b>      | The Comparison of Protein Electrophoresis in Chickens During High and Low Egg Laying Periods  | <i>Putnam Valley HS</i> |
| <b>Sara Fryxell</b>         | Gene Regulation in a Collagen Mutant of C. elegans  | <i>New Rochelle HS</i>  |
| <b>Fatima Gonzalez</b>      | The Optimization of the IL-17 Antibody and its Role in Infantile Spasms   | <i>New Rochelle HS</i>  |
| <b>Benjamin Hammond</b>     | Elucidating the role of peritoneal B1 cells in kidney injury and the cholinergic anti-inflammatory pathway  | <i>Byram Hills HS</i>   |

# HIGH SCHOOL

## BIOLOGY

|                                      |   |                           |
|--------------------------------------|---|---------------------------|
| <b>Ariana Ishkanian</b>              | A novel method for profiling beneficial and non-beneficial bacteria: Isolating the effect of D-raffinose microbial sub-population on host epithelial barrier function | <i>Byram Hills HS</i>     |
| <b>Kireeti Josyula</b>               | The Role of Interneurons in Striatal Medium-Sized Spiny Neuron degeneration in Huntington's Disease   | <i>Hackley HS</i>         |
| <b>Morgan Kelly</b>                  | Using Emerging Technologies for Population Biology and Behavioral Assessments of Florida Cetaceans  | <i>Fox Lane HS</i>        |
| <b>Kayleigh Kenny and Sun Graham</b> | The Effects of Subfreezing on the Efficacy of Permethrin-Treated Clothing as a Repellent for Haemaphysalis longicornis Ticks.   | <i>Somers HS</i>          |
| <b>Christian Kirchmann</b>           | Breeding site Preferences of Mosquitoes: How pH Affects Mosquito Larvae and Eggs  | <i>Somers HS</i>          |
| <b>Sarah Korn</b>                    | Characterization of XAF1 Isoforms From B6 and 129 Mice  | <i>Irvington HS</i>       |
| <b>Winnie Mann</b>                   | Tyrosine Kinase Inhibitors that Inhibit VEGFR are Potent Anti-Angiogenic Agents for Triple Negative Breast Cancer   | <i>White Plains HS</i>    |
| <b>Alexa Mcgrath</b>                 | An investigation of the medicinal value of the baboon diet in the wild: A comparative study across five species and six study sites                                   | <i>Byram Hills HS</i>     |
| <b>Amanda Mondschein</b>             | The Effect Decreasing Pumilio 1 has on Other Proteins in the Brain  | <i>White Plains HS</i>    |
| <b>Seth Morrison</b>                 | Relationship of chronotype with sleep duration, daytime sleepiness, and sustained attention in high school students: A pilot study                                    | <i>Byram Hills HS</i>     |
| <b>Adhithya Rajasekar</b>            | The Role of mTOR Pathway in CNS Myelination   | <i>Hendrick Hudson HS</i> |
| <b>Liam Shen</b>                     | Establishing Activin and BMP7 Responsiveness in an Atypical, Novel FOP mutation   | <i>Ardsley HS</i>         |
| <b>Kyla Simkhai</b>                  | The Use of Viral Vectors in the Downregulation of T-Bet and Bcl6, CD4+ T Cell Transcription Factors   | <i>Fox Lane HS</i>        |
| <b>Daniel Szlavik</b>                | Combatting the Mosquito Vector  | <i>Valhalla HS</i>        |
| <b>Sarah Visconti</b>                | The Effects of Lithium on Tau Buildup due to Alzheimer's Disease in a Transgenic Model of Drosophila melanogaster   | <i>White Plains HS</i>    |
| <b>Noah Yin</b>                      | Prevalence of Chlorhexidine Resistance in Coagulase Negative Staphylococcus   | <i>Irvington HS</i>       |



# HIGH SCHOOL

## CHEMISTRY

|                          |   |                        |
|--------------------------|---|------------------------|
| <b>Gabrielle Abato</b>   | The Effect of Growth Parameters on the Composition of InGaN   | <i>White Plains HS</i> |
| <b>Griffin Bates</b>     | A Computational Examination of the Permeability of DOPC-DOPS Bilayers   | <i>New Rochelle HS</i> |
| <b>Veronika Bilinski</b> | Probing the Polarity of Therapeutic Aptamers  | <i>Mahopac HS</i>      |
| <b>Thomas Gomez</b>      | The synthesis of a novel two-dimensional conjugated fused-ring electron acceptor utilizing fluorine and hexyl functional groups with alkoxy end groups as a high-performance transparent organic alternative to silicon photovoltaics | <i>Byram Hills HS</i>  |
| <b>Maeve Janecka</b>     | Analysis of Heavy Metal Concentrations in JUUL Electronic Cigarette Vapor Based on Vaping Topography Identified from a Survey of Young Adults   | <i>Somers HS</i>       |
| <b>Dylan Lanza</b>       | X-Ray Fluorescence Comparative Analysis of a Native American Paint Pot to Soil and Clay Samples on a Significant Archeological Site   | <i>Somers HS</i>       |

## Clinical / Social Psychology

|                          |  |                       |
|--------------------------|--|-----------------------|
| <b>Haziq Ahmad</b>       | The Effect of Caregiving on the Quality of Life of Alzheimer's Disease Caregivers  | <i>Yorktown HS</i>    |
| <b>Samantha Blackman</b> | Coaches On the Front Line: Assessing coach preparation and confidence to recognize and address student athlete mental health issues                          | <i>Ardsley HS</i>     |
| <b>Oliver Brocato</b>    | #GoingViral: The development of a predictive model for optimizing potential online viral success   | <i>Byram Hills HS</i> |
| <b>Kiarra Condon</b>     | Public Awareness and Acceptance of Microbiota Transfer Therapy on Autism   | <i>Mahopac HS</i>     |
| <b>Ariana Dan</b>        | Is green the new black? Understanding female consumer's perception of and determinants for purchasing sustainable, environmentally-friendly fashion garments | <i>Byram Hills HS</i> |
| <b>Christian Deleg</b>   | Identifying Effective Strategies and Challenges Associated with the Implementation of Student-Centered Learning in Pre-K to 12th Grade                       | <i>Yorktown HS</i>    |

# HIGH SCHOOL

## Clinical / Social Psychology

|   |  |                         |
|---|--|-------------------------|
| <b>Shannon Dinizo</b>                                     | Assessing Quality of Life among High-Functioning Autism Spectrum Disorder Adults   | <i>Putnam Valley HS</i> |
| <b>Lauren Ellyn</b>                                       | Adolescents Perception Towards Menopause   | <i>Putnam Valley HS</i> |
| <b>Sebastian Fernandez</b>                                | Evaluating a person's measured media multitasking ability on their time of task, efficiency, and time perception while media multitasking and monotasking. | <i>Sleepy Hollow HS</i> |
| <b>Alexis Francis</b>                                     | The Effect of Parenting Style and Personality Type on Classical Musicians' Career Development  | <i>Rye HS</i>           |
| <b>Yvonne Fu</b>  | Exploring the relationship between musical rhythm preference and pattern atypicality   | <i>Mahopac HS</i>       |
| <b>Skylar Holliday</b>                                    | Evaluating Patient Experience Using the "Picker Patient Experience" Survey in Relation to Native Language  | <i>Sleepy Hollow HS</i> |
| <b>Daryn Kaplan</b>                                       | The relationship between Flow Experience and Quality of Life in high school athletes and artists: A pilot study  | <i>Byram Hills HS</i>   |
| <b>Julia Kindler</b>                                      | The Effect of Smartphone Usage on Concentration Levels and Academic Performance  | <i>Harrison HS</i>      |
| <b>Abigail Lowder</b>                                     | Personality Pathologies and Love Styles in an Adolescent Population  | <i>Putnam Valley HS</i> |
| <b>Amanda Mackey</b>                                      | Homesickness and resilience in emerging adults: Evaluating the influence of sleepaway camp attendance on college experiences                               | <i>Byram Hills HS</i>   |
| <b>Arianna Mata</b>                                       | The Impact Treatments Have On The Quality of Life of Leukemia Patients   | <i>Yorktown HS</i>      |
| <b>Katherine Nazarov and Marie Lucia (Chia) Salisbury</b> | Stress in Schools: The Benefits of Mindfulness Rooms and Stress Management Resources   | <i>Yorktown HS</i>      |
| <b>Elizabeth Peron</b>                                    | The Effects of Bilingualism and Socioeconomic Status on the Development of Joint Attention in Infants  | <i>Rye HS</i>           |
| <b>Taleen Postian</b>                                     | Not at the Dinner Table: Utilizing Trait and Ability Emotional Intelligence scores to understand Political Opinion   | <i>Byram Hills HS</i>   |

# HIGH SCHOOL

## Clinical / Social Psychology

|                          |   |                         |
|--------------------------|---|-------------------------|
| <b>Mitchell Saunders</b> | Do E-commerce Ads Get Enough Bang for Their Buck?<br>Testing the Effect of E-commerce Ads on Consumer Buying Patterns | <i>Blind Brook HS</i>   |
| <b>Sydney Schulz</b>     | The Effect of Racial Bias on the Cross Race Effect  | <i>Sleepy Hollow HS</i> |
| <b>Melanie Schwartz</b>  | Mental Health Outcomes of Caregivers Caring for Chronically Ill Patients  | <i>White Plains HS</i>  |
| <b>Parker Sperrazza</b>  | How Competitive versus Cooperative games associate with Social Skills in Teens  | <i>Putnam Valley HS</i> |
| <b>Julia Stanzione</b>   | Assessing Attitudes Towards Tissue Engineering by Using an Educational Intervention                                   | <i>Putnam Valley HS</i> |
| <b>Karina Ulrich</b>     | The Correlation Between Intrusive Adolescent Behaviors and Technology   | <i>Irvington HS</i>     |
| <b>Scott Weitman</b>     | Emotional and Social Impact of Autoimmune Diseases  | <i>Yorktown HS</i>      |
| <b>Zoe Wilson</b>        | The Association Between Race and Socioeconomic Status on the Knowledge of Alzheimer's Disease.                        | <i>New Rochelle HS</i>  |

## Earth /Space

|                                       |  |                        |
|---------------------------------------|--|------------------------|
| <b>Sarah Athir</b>                    | Determining How Precipitation Will React To A Warming Climate: Tracking Changes in The ITCZ Using Sediment Provenance                  | <i>New Rochelle HS</i> |
| <b>Joshua Cohen and Madeline Wong</b> | Measurement of the H-alpha Spectral Feature in Relation to the Mass of Low-mass Stars in the Hyades Open Cluster                       | <i>Ardsley HS</i>      |
| <b>Aimee Holland</b>                  | Establishing a Baseline Rate of Cosmic Microspherule Deposition  | <i>Westlake HS</i>     |
| <b>Morgan Remeza</b>                  | Peltier Thermoelectric Generation Onboard Spacecraft   | <i>Harrison HS</i>     |
| <b>Ben Rieber</b>                     | Farming For The Future: Agriculture on Mars  | <i>Valhalla HS</i>     |
| <b>Catherine Stanton</b>              | Local Effects of Magnetic and Plasma Turbulence due to the Passage of Quasi-Parallel and Quasi-Perpendicular Interplanetary Shockwaves | <i>White Plains HS</i> |

# HIGH SCHOOL

## Engineering / Technology

|                         |   |                       |
|-------------------------|---|-----------------------|
| <b>Paul Gschneidner</b> | A Cleaner, More Cost-Efficient Refrigerator? Analyzing a Prototype Plate Stack for a Magnetocaloric Regenerator               | <i>Westlake HS</i>    |
| <b>Spencer Karp</b>     | A step towards energy efficient infrastructure: A weakly supervised approach to power signal labeling in commercial buildings | <i>Byram Hills HS</i> |
| <b>Swaroop Pujari</b>   | Utilizing a Modified Electrostatic Precipitator for the Efficient Removal of Particulate Matter at its Origin                 | <i>Yorktown HS</i>    |
| <b>Jared Shectman</b>   | Developing Sensors For Driverless Vehicles In A Degraded Visual Environment   | <i>Mahopac HS</i>     |
| <b>Adrianna Tagayun</b> | Bulk Heterojunction Morphology for Efficient Organic Solar Cells by Surrogate Modeling  | <i>Somers HS</i>      |
| <b>Adam Zeng</b>        | Improving the net lift of an ornithopter through implementation of an interchangeable bioinspired check valve structure       | <i>Byram Hills HS</i> |

## Environment

|                             |   |                            |
|-----------------------------|---|----------------------------|
| <b>Sayako Aizeki-Nevins</b> | Escherichia coli and coliform bacterial colonization of microplastics                       | <i>Sleepy Hollow HS</i>    |
| <b>Giulia Auricchio</b>     | Collagen's Efficiency as a Natural Coagulant in Turbid Water                                | <i>The Ursuline School</i> |
| <b>Maximus Caron</b>        | Mapping of Residents in Phoenix Az, to Determine the Effect of Solar Heat on Human Activity | <i>Somers HS</i>           |
| <b>Isabella Chambers</b>    | Quantifying microplastic pollution in streams and lakes in the lower Hudson Valley.         | <i>Sleepy Hollow HS</i>    |
| <b>Peter Clark</b>          | Determining The Relative Contamination Of Local Water Sources Using Macroinvertebrates      | <i>Mahopac HS</i>          |
| <b>Laya Gollamudi</b>       | A simple homemade green water filter: using carbon and silver nanoparticles                 | <i>Rye HS</i>              |
| <b>Cayla Gona</b>           | The Effect of Sea Turtle Hatch and Emergence Success on Southeast Beaches                   | <i>Putnam Valley HS</i>    |
| <b>Katrina Kelly</b>        | The Comparison Between In Situ and Relocated Nests of Leatherback Sea Turtles               | <i>Pleasantville HS</i>    |

# HIGH SCHOOL

## Environment

|  |   |                            |
|--|---|----------------------------|
| <b>Ava Liebmann</b>                        | The Effect of Heat Stress on the Function of RuBisCo  | <i>Rye Neck HS</i>         |
| <b>Aidan Lynch</b>                         | The Effect of Mycorrhizal Colonization on the Growth of Northeastern Coniferous and Deciduous Trees   | <i>Pleasantville HS</i>    |
| <b>Daniel Machado</b>                      | The Impact White-tailed Deer Overbrowsing on the Native Plant Species of New York Forests   | <i>Peekskill HS</i>        |
| <b>Jonathan Marcuse and Owen Robertson</b> | Beaver Swamp Brook Conservation   | <i>Rye Neck HS</i>         |
| <b>Renuka Muralidhar</b>                   | Mobile Sensor for Mapping Methane Emissions   | <i>Mahopac HS</i>          |
| <b>Peter Nicholas</b>                      | A study on the most efficient variables in bioremediation of polyurethane, PET, and polyethylene using fungi  | <i>Rye Country Day</i>     |
| <b>Micaela Oram</b>                        | Comparing the Mass Balance of Glaciers in the Eastern Brook Range during 1972 and 2016  | <i>White Plains HS</i>     |
| <b>Alana Rabinowitz</b>                    | A Novel Approach to Detecting Microplastics by Analyzing the Efficacy of Benthic Macroinvertebrates as Bioindicators  | <i>Mahopac HS</i>          |
| <b>Yaffa Segal</b>                         | Honey as a Biomonitor: Using Honey Mass Spectrometer Analysis for Heavy Metal Detection in New York City  | <i>New Rochelle HS</i>     |
| <b>Maxwell Semegran</b>                    | Aquatic Invasive Species Survey of Lake Mahopac   | <i>Mahopac HS</i>          |
| <b>Gabriella Shikapwashya</b>              | Discovery and Analysis of a Bacteriophage   | <i>Valhalla HS</i>         |
| <b>Sarah Siemers</b>                       | The Role of Selenium in Reducing Mercury Toxicity: An Analysis of Selenium and Mercury interactions in Fish Tissue Samples from Onondaga Lake in Syracuse, NY | <i>Somers HS</i>           |
| <b>Ava Vernor</b>                          | Microbial Selection and MIC Risk – What is the Impact of Biocide Treatment on Frac Water  | <i>New Rochelle HS</i>     |
| <b>Lorelei Wolf</b>                        | New York City's Changing Climate and its Growing Similarities to Seasonal Patterns in Tokyo, Japan  | <i>The Ursuline School</i> |
| <b>Fiker Zewdie</b>                        | A Quantification of the Interaction Between the Urban Heat Island Effect and Global Warming   | <i>Ardsley HS</i>          |

# HIGH SCHOOL

## Health / Nutrition

|                        |  |                            |
|------------------------|--|----------------------------|
| <b>Max Greisberg</b>   | Working Toward Best Practices in Disinfection of Athletic (Wrestling) Mats and Decreasing Skin Infections in Athletes              | <i>Tappan Zee HS</i>       |
| <b>Cathleen Hughes</b> | Neighborhood Poverty Effect On Self-Rated Health In New York City  | <i>The Ursuline School</i> |
| <b>Larissa Iraj</b>    | The Effect of the Antioxidant, Resveratrol, on Prolonging the Lifespan of Drosophila melanogaster Over Multiple Generations        | <i>Harrison HS</i>         |
| <b>Jolie Kantor</b>    | Creating a Systematic Review of Contouring Guidelines in Radiation Oncology  | <i>Scarsdale HS</i>        |
| <b>Lily Napach</b>     | An Analysis on Peanut IgE and SPT Values to Determine the Percentage of Peanut Allergic Patients Likely to Pass a Peanut Challenge | <i>Hackley HS</i>          |
| <b>Phoebe Neilsen</b>  | Investigating the effects of curcumin combined with piperine on Drosophila melanogaster fed a high fat diet                        | <i>Sleepy Hollow HS</i>    |
| <b>Asha Rath</b>       | Assessing the Pathological Effects of Maternal Malnourishment and Fetuin-B on Placental Tissues                                    | <i>Yorktown HS</i>         |
| <b>Olivia Toth</b>     | The Effect of a Video Educational Intervention on Perspectives Towards the Consumption of a Plant-Based Diet                       | <i>Putnam Valley HS</i>    |
| <b>Jaime Virola Jr</b> | Acupuncture: How Stimulating the Vagus Nerve Could Lower Blood Pressure  | <i>Mahopac HS</i>          |
| <b>Jonathan Zhou</b>   | The Impact of Time Varying Atmospheric Pollutant Mixtures on Prenatal Development  | <i>Horace Greeley HS</i>   |

## Math Computers

|                          |  |                   |
|--------------------------|--|-------------------|
| <b>Yu-Chen Lung</b>      | An Accessible Alternative Deep Learning Solution for Object Detection                                | <i>Ardsley HS</i> |
| <b>Aaron Chu-Carroll</b> | Testing Computer Generated Disinformation with Human Written Fake News Using the Neural Model Grover | <i>Ardsley HS</i> |



# HIGH SCHOOL

## Math / Computers

|                            |   |                           |
|----------------------------|---|---------------------------|
| <b>Henry Demarest</b>      | Assessing the Impact of Robust Stochastic Operators on Q-learning Efficiency in an OpenAI Gym Environment with a Large Observation Space                    | <i>Irvington HS</i>       |
| <b>Arya Glenn</b>          | Identification of apoE4 structure stabilizers through DOCK6 and molecular dynamics simulations  | <i>Sleepy Hollow HS</i>   |
| <b>Rishit Gupta</b>        | Error Correction using a Repetition Code on the 14 qubit IBMQ Melbourne Quantum Computer  | <i>Irvington HS</i>       |
| <b>Nayoung Ko</b>          | Cevians and Cevaxis Triangle  | <i>The Masters School</i> |
| <b>George Liu</b>          | Investigating the Effects of Lossy Compression on Adversarial Examples  | <i>Scarsdale HS</i>       |
| <b>Robert Lusthaus</b>     | Predicting Conflict in the Legend of Zelda with Artificial Intelligence   | <i>Somers HS</i>          |
| <b>Merry Mayers</b>        | An evaluation of network-informed disease contact parameters for the California puma population   | <i>Byram Hills HS</i>     |
| <b>Athanasia Meimeteas</b> | Predicting the Relationship between Marriage and Discussion of Women's Issues in Congressional Representatives: A Multiplicative Interaction Model Approach | <i>Harrison HS</i>        |
| <b>Stanley Plaza</b>       | Will Reducing the Number of Certain Misclassifications in Textual Entailment Models Improve the Accuracy when Used in Question Answering Systems?           | <i>White Plains HS</i>    |
| <b>Roman Raguso</b>        | Investigating Mask-Based vs. Neural Network Image Detection (YOLO) to Reduce Animal-Vehicle Collisions  | <i>Westlake HS</i>        |
| <b>Sean Reichbach</b>      | Determining Trends in US Presidential Election Polls by Locating Inaccuracies in Past Elections   | <i>Somers HS</i>          |

## Medicine and Medical Science & Technology

|                                    |   |                         |
|------------------------------------|---|-------------------------|
| <b>Brienna Ahmetaj</b>             | The Development of a ddPCR Assaay for the Quantification of Androgen Variants from RNA  | <i>Pleasantville HS</i> |
| <b>Emily Arena and Emily Heese</b> | The Effect of Combined Transcranial Direct Current Stimulation and Bimanual Intensive Therapy on Upper Limb Function in Children with Unilateral Spastic Cerebral Palsy | <i>Somers HS</i>        |

# HIGH SCHOOL

## Medicine and Medical Science & Technology

|                               |  |                            |
|-------------------------------|--|----------------------------|
| <b>Phoebe Barnes</b>          | A Novel Neurological Basis for Opioid Addiction? How Orexin Receptor Knockouts Impact Neurons in the Lateral Hypothalamus  | <i>Westlake HS</i>         |
| <b>Niharika Bhattacharjee</b> | Digital Dental Triage: Automated Digital Diagnosing System For Dental Cavities Using Artificial Intelligence   | <i>Yorktown HS</i>         |
| <b>Breanna Brownson</b>       | Use of cardioprotective paracrine factors secreted by hgPSC-derived cardiomyocytes to prevent fibroblast activation and scar formation following myocardial infarction                       | <i>Rye HS</i>              |
| <b>Hayley Calloway</b>        | Changes in Processing Speed in Children, Adolescents, and Young Adults with Sickle Cell Anemia Following Stem Cell Transplantation   | <i>Somers HS</i>           |
| <b>Kimberly Carlton</b>       | The Effects of Bitter Substances Alternatives on the Bronchodilation of Airways in Asthma Patients   | <i>Rye Neck HS</i>         |
| <b>Anthony Canger</b>         | How the Application of Various Transcription Factors Affects Cerebral Organoid Pluripotency  | <i>Yorktown HS</i>         |
| <b>Olivia Cartano</b>         | Evaluating the Standard of Care for HPV-Negative Oropharyngeal Cancer Patients: Defining Candidacy for Treatment De-Escalation   | <i>Westlake HS</i>         |
| <b>Pearl Chalsen</b>          | Comparing the Practicality, Simplicity and Preciseness of the O'Neill vs. Teed's Scale when Evaluating Eustachian Tube Dysfunction and Middle Ear Barotrauma in Clinical Hyperbaric Patients | <i>Irvington HS</i>        |
| <b>Kyle Chouinard</b>         | Investigating the Relationship Between Misophonic Trigger Prevalence and Their Sound Structures  | <i>Somers HS</i>           |
| <b>Elizabeth Chun</b>         | Combating Familial Alzheimer's Disease: Assessing the Effect of Resveratrol on a Presenilin Model of Drosophila melanogaster   | <i>Ardsley HS</i>          |
| <b>Shravan Desikan</b>        | The Effect of DAP12 Deficiency on Tau Pathology and Inflammation in Alzheimer's Diseased Brains  | <i>Yorktown HS</i>         |
| <b>Victoria Diaz</b>          | Birth Order as a Factor to Autism a Meta-Analysis  | <i>The Ursuline School</i> |

# HIGH SCHOOL

## Medicine and Medical Science & Technology

|                                  |   |                                     |
|----------------------------------|---|-------------------------------------|
| <b>Meagan Eickelbeck</b>         | The use of CpG oligodeoxynucleotides as an adjuvant for immunotherapy to mediate the T-helper cell response against dog allergies   | <i>Byram Hills HS</i>               |
| <b>Arwen Fernandez O'Brien</b>   | Pharmacogenomics - Determining the Role of Naturally Occurring Genotypes for Medical Advances   | <i>Harrison HS</i>                  |
| <b>Nicole Garrity</b>            | Utrophin Haploinsufficiency in the Myocardium, Diaphragm and Tibialis Anterior Muscle Replication of Duchenne Muscular Dystrophy  | <i>Somers HS</i>                    |
| <b>Michael Horan</b>             | Treatment of Intraventricular Hemorrhage in Preterm Rabbits with PPAR- $\gamma$   | <i>Mahopac HS</i>                   |
| <b>Sarah Ilany</b>               | Determining the effect of the Medtronic MiniMed 670G on the restoration of glucose counterregulation and hypoglycemia avoidance in longstanding type 1 diabetes: A six month preliminary analysis | <i>Byram Hills HS</i>               |
| <b>Ria Jacob and Rohan Jacob</b> | The Impact of Stress on the Susceptibility of Alcoholic Liver Disease   | <i>Yorktown HS</i>                  |
| <b>Swaneet Jha</b>               | Enhanced Formulation of Food Allergy Herbal Formula, EBF2 inhibits proInflammatory Protein - TNF $\alpha$ with potential to prevent Parkinson's Disease   | <i>Clarkstown High School South</i> |
| <b>Anna Keane</b>                | The Validity of Using the Post-Concussion Symptom Scale as a Method for Screening Anxiety Disorders   | <i>Somers HS</i>                    |
| <b>Lauren Kitts</b>              | The Effect of Diet on Mice Colonized with IBD Microbiomes   | <i>Yorktown HS</i>                  |
| <b>Akshara Koottala</b>          | Establishing a Link Between Epilepsy and Genetics: Tracking the GABAergic Neurons in Rat Brains Prenatally Primed with Betamethasone Using Neuropeptide Y as a Marker                             | <i>New Rochelle HS</i>              |
| <b>Marco Landicino</b>           | Association Between Polycystic Ovary Syndrome and Risk of Pancreatic Cancer   | <i>Yorktown HS</i>                  |
| <b>Jessie Liu</b>                | Developing and Evaluating a Novel Retinoblastoma Staging Application  | <i>Scarsdale HS</i>                 |

# HIGH SCHOOL

## Medicine and Medical Science & Technology

|                          |  |                          |
|--------------------------|--|--------------------------|
| <b>Ariel Markowski</b>   | The Effect of Gene Deletion on Axonal Growth and Motor Recovery  | <i>Somers HS</i>         |
| <b>Samantha Martinez</b> | Antibodies From Children With PANDAS Bind to Striatal Cholinergic Interneurons   | <i>White Plains HS</i>   |
| <b>Robin Masterson</b>   | The Effects of Estrogen on Spatial Discrimination Within a Novel Environment in a Murine Model   | <i>Somers HS</i>         |
| <b>Jianna Melikian</b>   | Determining The Effect Of Caffeine on Gastroesophageal Reflux In Premature Infants   | <i>Putnam Valley HS</i>  |
| <b>Zoey Millstein</b>    | Lithium and Metformin as a Combination Therapy for Post Traumatic Brain Injury with Drosophila melanogaster  | <i>Sleepy Hollow HS</i>  |
| <b>Maddie Monness</b>    | Comparison of Spinal Measurements using Formetric 4D Technology and Conventional Radiography   | <i>Irvington HS</i>      |
| <b>Henry O'Donnell</b>   | Optimization of Nicotinamide Riboside concentration to be Administered to Schwann Cells (SC) to Elevate Levels of NAD+ and Sir2 proteins.            | <i>White Plains HS</i>   |
| <b>Danielle Olenchak</b> | Measuring the Left Atrial Appendage  | <i>Valhalla HS</i>       |
| <b>Lauren Peacock</b>    | Single Prolonged Stress as a Model for Posttraumatic Stress Disorder and Neuropeptide Y as a Potential Treatment                                     | <i>Pleasantville HS</i>  |
| <b>Anika Puri</b>        | iXoSCAN: A Deep Learning software and hardware-driven scanner for real-time detection of ticks to prevent Lyme disease and other tick-borne diseases | <i>Horace Greeley HS</i> |
| <b>Faith Pyle</b>        | The Impact of Oxidative Stress Metabolites on the Progression of Babesiosis  | <i>Yorktown HS</i>       |
| <b>Muhammad Rashid</b>   | The role of APP and Presenilin 1 mutations on the early-onset of Alzheimer's disease in transgenic Drosophila models.                                | <i>White Plains HS</i>   |
| <b>Abhaya Ravikumar</b>  | Single Cell Investigation of the Immune Microenvironment of Human Breast Cancer  | <i>Pleasantville HS</i>  |
| <b>Rachel Rivera</b>     | Determinants of Coronary Vascular Events Responsible for Sudden Death- Vulnerable Plaque Trial   | <i>New Rochelle HS</i>   |

# HIGH SCHOOL

## Medicine and Medical Science & Technology

|                         |   |                            |
|-------------------------|---|----------------------------|
| <b>Joanna Rodrigues</b> | The effect of hormone therapeutic agent Letrozole on human Lymphatic endothelial cells in vitro   | <i>Putnam Valley HS</i>    |
| <b>Lori Saxena</b>      | Pharmacological Inhibition of the Potassium Chloride Cotransporter KKC2 Initiates Neuronal Apoptosis                                      | <i>Horace Greeley HS</i>   |
| <b>Nitin Seshadri</b>   | MRAP2 in the Hypothalamus of Prenatally Betamethasone Primed Rats and Saline Controls for Treatment of Infantile Spasms                   | <i>Somers HS</i>           |
| <b>Nicole Silvagni</b>  | Use of Xenogeneic DNA Vaccine (Oncept®) on Canine Stage I Malignant Melanoma  | <i>Mahopac HS</i>          |
| <b>Isabella Sirchia</b> | Confirming the Target Protein Expression for Chimeric Antigen Receptor T-cell Therapy in Glioblastoma Multiforme                          | <i>Somers HS</i>           |
| <b>Ananya Sistla</b>    | Applying Artificial Intelligence to Improve Evidence Based Medicine   | <i>Ardsley HS</i>          |
| <b>Owen Skriloff</b>    | An in vitro evaluation of the relationship between stress and mineralization through the use of a piezoelectric barium titanate composite | <i>Byram Hills HS</i>      |
| <b>Allison Stillman</b> | Luminopsin gene therapy for seizure suppression: Activating GABAergic hippocampal neurons in VGAT-Cre and VGAT-PARV mouse models.         | <i>Byram Hills HS</i>      |
| <b>Grace Tian</b>       | The Genetic Basis of Altered Acylcarnitine Levels in Patients with Alzheimer's Disease  | <i>Yorktown HS</i>         |
| <b>Leah Varghese</b>    | Detection of Non-invasive Ovarian Cancer via an Optical Carbon Nanosensor   | <i>The Ursuline School</i> |
| <b>Maya Weitzen</b>     | High-throughput discovery and validation of tumor-specific HLA-presented peptides in non-small cell lung carcinomas                       | <i>Sleepy Hollow HS</i>    |
| <b>Roland Yan</b>       | Can N95 and other Facial masks be reused to combat the severe shortage in the ongoing COVID-19 Pandemic?                                  | <i>Clarkstown HS South</i> |

# HIGH SCHOOL

## Medicine and Medical Science & Technology

|                          |  |                          |
|--------------------------|--|--------------------------|
| <b>Ritvik Yaparpalvi</b> | Evaluating Therapeutic Instrumental Music Performance (TIMP) as a form of Upper Limb Mobility Rehabilitation for Various Disorders and Neurological Diseases: A Proof of Concept Feasibility Study | <i>Ardsley HS</i>        |
| <b>Thomas Ye</b>         | Evaluation of Valvular Inflammation in Calcific Aortic Valve Disease   | <i>Horace Greeley HS</i> |
| <b>Michael Zhong</b>     | The Identification of Novel Targets and Pathways of Alzheimer's Disease Through Integrated System Approaches   | <i>Ardsley HS</i>        |

## Physics

|                               |   |                     |
|-------------------------------|---|---------------------|
| <b>Alexander Bjorgvinsson</b> | Investigation of a Chladni Plate as a Means of Separating Particles of Various Masses and Densities | <i>Irvington HS</i> |
|-------------------------------|---|---------------------|

## Physiological Experimental Psychology

|                               |  |                        |
|-------------------------------|--|------------------------|
| <b>Max Acosta</b>             | How the Aspects of One's Life Affect Their Perception of Nanotechnology                              | <i>New Rochelle HS</i> |
| <b>Brittney Benjamin</b>      | Public Awareness of Genetic and Environmental Factors Influencing Complex Diseases                   | <i>New Rochelle HS</i> |
| <b>Juliette Ekeroth Klink</b> | Determining the Benefits of Mindfulness in Adolescents   | <i>Valhalla HS</i>     |
| <b>Rachel Fox</b>             | Differences in Eczema Experience Associated with Racial Identification                               | <i>New Rochelle HS</i> |
| <b>Sebastian Garibaldi</b>    | The Effect Of Different Genres of Music On Short-Term Memory Retention Among High-School Students    | <i>White Plains HS</i> |
| <b>Sydney Glassman</b>        | Exploring the ephemeral facets of Snapchat with respect to lingering anxiety in suburban adolescents | <i>Byram Hills HS</i>  |



# HIGH SCHOOL

## Physiological Experimental Psychology

|                  |  |                     |
|------------------|--|---------------------|
| Lara Greene      | Flashing Rate and the Kullback-Leibler Divergence  | Irvington HS        |
| Carolina Pedraza | Heightened Anxiety in Children and Adolescents with Tic Disorders  | Byram Hills HS      |
| Nina Pena        | Similarities Between Pets and Their Owners   | New Rochelle HS     |
| Kathryn Ravano   | Assessing the Capabilities of Subliminal Meditations on Mathematics  | Valhalla HS         |
| Arlene Shaji     | The Effect of Chronotropic Incompetence on Exercise Intolerance and Quality of Life  | New Rochelle HS     |
| Anant Shyam      | Assessing the Effectiveness of the Educational Design of the B-Con Course  | Valhalla HS         |
| Alliyah Steele   | Examining the Effect of Rural and Urban Environments on Scene Processing of BOLD5000 Images Behaviorally and Neurologically using fMRI | Putnam Valley HS    |
| Sophia Vitolo    | "Breast Cancer Treatments and Their Effect on Women's Body Image"  | The Ursuline School |

Financial Support is always welcome

Use PayPal: [JNewman@DiscoveryCtr.org](mailto:JNewman@DiscoveryCtr.org)

Or mail: Putnam Children's Discovery Center, Inc.

PO Box 222

Carmel, NY 10512