



## Junior

## Animal Sciences

### Recognition

**Students Name(s):** Nathan Boyd  
**School:** Frostproof Middle Senior High School, **Region:** Polk  
**Title:** Color Changing Plecos

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**Students Name(s):** Anacarolina Paz; Angeline D Vargas  
**School:** Bob Graham Educational Center, **Region:** South Florida  
**Title:** Effects of Magnetism on Planaria

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### Honorable Mention

**Students Name(s):** Arpita Kumar  
**School:** Teague Middle School, **Region:** Seminole  
**Title:** Are Insects Attracted to Light or Heat of a Light Bulb?

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### Fourth Place

**Students Name(s):** Ryan M Doersam  
**School:** Herbert H. Hoover Middle School, **Region:** Brevard: Intracoastal  
**Title:** An Ant Aversion Alternative

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**Students Name(s):** Lillian M Fontaine  
**School:** Saint John Lutheran School, **Region:** Big Springs  
**Title:** Mealworm Madness- Which Environmental Conditions Do Mealworms Like Best?

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### Third Place

**Students Name(s):** Eden R Jennings  
**School:** Academy at the Lakes, **Region:** Pasco  
**Title:** What Are the Affects of an Organic vs Inorganic Tofu Diet on the Fertility of the *Drosophila melanogaster*?

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**Students Name(s):** George Pesin  
**School:** George Washington Carver Middle School, **Region:** South Florida  
**Title:** Honey, Where's the Sugar?

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**Students Name(s):** Corgan Donald  
**School:** Stone Magnet Middle School, **Region:** Brevard: South  
**Title:** The Effects of Artificial Sweeteners on the Speed of Memory in Peppermint Shrimp, *Lysmata wurdemanni*

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### Second Place

**Students Name(s):** Yazan O Abdul-Jawad  
**School:** The Cornerstone School, **Region:** Big Springs  
**Title:** What PAR Level Is Best for Corals?

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**Students Name(s):** Michael Mikati  
**School:** The Weiss School, **Region:** Palm Beach  
**Title:** Sensitivity of *Manduca sexta* Moths to Various Light Wavelengths

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### First Place

**Students Name(s):** Atreya Manaswi

**School:** Orlando Science Middle School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Finding the Best Novel Compound to Attract Small Hive Beetles and Improve Honey Bee Strength

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**Grand Award Winner**

**Students Name(s):** Atreya Manaswi

**School:** Orlando Science Middle School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Finding the Best Novel Compound to Attract Small Hive Beetles and Improve Honey Bee Strength

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## Junior

## Behavioral & Social Sciences

### Recognition

**Students Name(s):** Yara Ismail

**School:** Garden of the Sahaba Academy , **Region:** Palm Beach

**Title:** Optical Illusions

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**Students Name(s):** Taehyun V Won

**School:** Jackson Heights Middle School, **Region:** Seminole

**Title:** SCPS Parents' Experience with Education Options During COVID-19

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### Honorable Mention

**Students Name(s):** Elisa N Virkler

**School:** Hill-Gustat Middle School, **Region:** Heartland

**Title:** Pitch Perfect

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### Fourth Place

**Students Name(s):** Nishi V Bhanderi

**School:** Maclay School, **Region:** Capital

**Title:** Does Having a Purpose Affect the Time of a Person Racing 1600 Meters?

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**Students Name(s):** Clara Milosevic

**School:** Westwood Middle School, **Region:** Alachua

**Title:** How Does the Bias of the Media Affect Teens' Perspectives of COVID-19?

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### Third Place

**Students Name(s):** Mehereen Chowdhury

**School:** Canterbury School of Fort Myers, **Region:** Thomas Alva Edison

**Title:** A Novel Approach to the Cognitive Effects of Different Types of Multitasking and its Effect on Short Term Memory

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### Second Place

**Students Name(s):** Delaney C Peterson

**School:** The Cornerstone School, **Region:** Big Springs

**Title:** Effect of After-School Activities on Middle School Students' Empathy Quotient

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### First Place

**Students Name(s):** Madison Y Fang

**School:** Liberty Middle School, **Region:** Hillsborough

**Title:** U Drive. U Text. U Pay.

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## Junior

## Biomedical & Health Sciences

### Recognition

**Students Name(s):** Abigail K Laber

**School:** Charles S. Rushe Middle School, **Region:** Pasco

**Title:** Which Masks Will Protect the Best Against Covid-19?

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**Students Name(s):** Sawyer R Paschall

**School:** Sebastian Charter Junior High School, **Region:** Indian River

**Title:** Mask Mashup

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**Students Name(s):** Savita Shah

**School:** Westwood Middle School, **Region:** Alachua

**Title:** Which Mask Fabric Is Most Protective at Repelling the Coronavirus?

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### Honorable Mention

**Students Name(s):** Nathan Nasello; Evan Stiltner

**School:** Lakeland Christian School, **Region:** Polk

**Title:** Masked Mannequin: How Effective Are Different Masks at Various Distances?

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**Students Name(s):** Jaxson D Moenning

**School:** Charlotte Preparatory School , **Region:** Thomas Alva Edison

**Title:** Wearing a Swim Cap is a Drag... or Not

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**Students Name(s):** Ananya Purimetta

**School:** Orlando Science Middle/ High Charter School , **Region:** Dr. Nelson Ying Expo - Orange

**Title:** How Do the Devices We Use Daily Affect our Health?

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### Fourth Place

**Students Name(s):** Helena A Brewer

**School:** Oakridge Middle School, **Region:** Collier

**Title:** 20-20-20 in 2020 for 20//20

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**Students Name(s):** Twisha Bhattachryya

**School:** Edgewood Jr/Sr High School, **Region:** Brevard: Intracoastal

**Title:** Pills, Pain Relievers, PH: Effect of GI PH on OTC Pain Medicine Absorption.

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**Students Name(s):** Rima Alsheikh

**School:** Eagles Landing Middle School, **Region:** Palm Beach

**Title:** SPF Longevity of Natural Oils in an Oxybenzone and Octinoxate-Free Base

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**Students Name(s):** Armaan J Fatteh-Patil

**School:** American Heritage School, **Region:** Broward

**Title:** The Effect of Mask Fabric on the Transmission of Glo Germ through the Mask.

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**Students Name(s):** Olivia Prater

**School:** Westwood Middle School, **Region:** Alachua

**Title:** How Do Different LED Light Colors Affect the Color Contrast of the Text Color and Background Color of a Book?

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**Third Place**

**Students Name(s):** Anik Naik

**School:** Holy Trinity Episcopal Academy , **Region:** Brevard: Mainland

**Title:** Could *Porphyra umbilicalis* be a Better Alternative than Chemical Sunscreen for Protection Against Ultraviolet Rays and the Safety of Marine Life?

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**Students Name(s):** Aanvi Mathur

**School:** Orlando Science School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Which Form of Calcium Supplementation Is Most Effective for Osteoporosis?

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**Students Name(s):** Lisa M Maeda

**School:** Benito Middle School, **Region:** Hillsborough

**Title:** Are You Safe Behind Your Mask? Reduction of Airborne Transmission Through Air Flow By Various Mask Materials

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**Second Place**

**Students Name(s):** Karolina S Porcelli

**School:** Seven Springs Middle School, **Region:** Pasco

**Title:** YES to Moisturizer! NO to Eczema!

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**Students Name(s):** Maria Vittoria Rutherford

**School:** Palmer Catholic Academy , **Region:** St. Johns

**Title:** A Bright Idea for Treating Lung Infections: Studying the Propagation of UV Light in a Phantom Medium for Surfactant Lipids Using a Common Household Item

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**First Place**

**Students Name(s):** Mason Huffman

**School:** Trafalgar Middle School, **Region:** Thomas Alva Edison

**Title:** Assessing Mask Efficacy with Laser and Sound Transmission

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**Grand Award Winner**

**Students Name(s):** Mason Huffman

**School:** Trafalgar Middle School, **Region:** Thomas Alva Edison

**Title:** Assessing Mask Efficacy with Laser and Sound Transmission

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## Junior

## Cellular/Molecular Biology & Biochemistry

### Recognition

**Students Name(s):** Victoria Stern

**School:** Loggers' Run Middle School, **Region:** Palm Beach

**Title:** What Type of Milk Has the Highest Amount of Protein?

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### Honorable Mention

**Students Name(s):** Ryan Dovell

**School:** Westwood Middle School, **Region:** Alachua

**Title:** How Do Different Carbonated Beverages Affect Eggshell

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**Students Name(s):** Mia G Brien

**School:** Sacred Heart Catholic School, **Region:** Northeast Florida

**Title:** Binding Agents for Chai Tea

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### Fourth Place

**Students Name(s):** Mavis C Masuecos

**School:** Herbert H. Hoover Middle School, **Region:** Brevard: Intracoastal

**Title:** Comparing the Absorbed Radiation Dosage of *Chlorella vulgaris* and *Aspergillus niger* Pigment

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### Third Place

**Students Name(s):** Kailee A Webster

**School:** Storm Grove Middle School, **Region:** Indian River

**Title:** Beware of the Bezoar

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### Second Place

**Students Name(s):** Tanishka B Aglave

**School:** Williams Middle Magnet School, **Region:** Hillsborough

**Title:** Screening of alternative hosts of Pestalotiopsis disease in strawberry and its validation through PCR

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### First Place

**Students Name(s):** Abdallah Sakallah; Yusuf Dirdis

**School:** Alazhar School, **Region:** Broward

**Title:** The Effect of Vitamin Antioxidants on Daphnia Exposed to Silver Nanoparticles

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## Junior

## Chemistry

### Recognition

**Students Name(s):** Sidney Teague

**School:** Holley Navarre Middle School, **Region:** West Panhandle

**Title:** Playing with Fire

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**Students Name(s):** Adriana R Massaroni Santella

**School:** Sebastian Charter Junior High School, **Region:** Indian River

**Title:** Dissolving Design

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**Students Name(s):** Sienna Ferry

**School:** Resurrection Catholic School, **Region:** Polk

**Title:** Burning Colors

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**Students Name(s):** Kevin Ortega

**School:** Palm Springs Middle School, **Region:** South Florida

**Title:** Pain Terminator!

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**Students Name(s):** William C Prendeville

**School:** Trinity Catholic School, **Region:** Capital

**Title:** C8H18 vs H2O

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### Honorable Mention

**Students Name(s):** Brian A Hammond

**School:** Pasco Middle School, **Region:** Pasco

**Title:** Color Writing

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**Students Name(s):** Herbert G Bresier

**School:** Shenandoah Middle School, **Region:** South Florida

**Title:** Hey! I Didn't Know My Bike Could Rust So Quick!

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**Students Name(s):** Gloria Milosevic

**School:** Westwood Middle School, **Region:** Alachua

**Title:** How Does the Type of Flour Added into Banana Bread Effect its Bake Time?

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**Students Name(s):** Thomas Wendling

**School:** Westwood Middle School, **Region:** Alachua

**Title:** How Do the Two Metals in a Galvanic Couple, also Known as a Corrosion Couple Affect the Amount of Corrosion that Forms?

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### Fourth Place

**Students Name(s):** Wyatt S Wahl

**School:** David C. Hinson Middle School, **Region:** Tomoka

**Title:** How Does Water from Different Sources Cause Limestone to Erode Leading to Sinkholes?

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**Students Name(s):** Emma Arentz

**School:** Resurrection Catholic School, **Region:** Polk

**Title:** How Acids Affect Corrosion

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**Students Name(s):** Cora L Henry  
**School:** South Seminole Academy , **Region:** Seminole  
**Title:** Are Household Liquids Effective in Breaking Down Plastics?

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**Students Name(s):** Stephen Nicolas  
**School:** Stone Magnet Middle School, **Region:** Brevard: South  
**Title:** The Effects of Trisodium Phosphate on Bone Density

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**Students Name(s):** Gracie Kate Spencer  
**School:** Hardee Junior High School, **Region:** Heartland  
**Title:** What Brand of Sunscreen With the Same SPF Is Most Effective?

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**Students Name(s):** Kaelie M Della-Luna  
**School:** Oak Hammock Middle School, **Region:** Thomas Alva Edison  
**Title:** Feelin' the Burn? Which Antacid Neutralizes Acid Most Effectively?

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### Third Place

**Students Name(s):** Bailey G Mathews  
**School:** Cypress Palm Middle School, **Region:** Collier  
**Title:** What Is the Minimum Amount of Flame Retardant Needed to Still Be Effective While Minimizing Health Risks?

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**Students Name(s):** Julia P Temple  
**School:** Wildwood Middle High School, **Region:** Big Springs  
**Title:** Plastic ... plastic Everywhere!: ... Is Polyethylene Terephthalate or Polyethylene a More Suitable Replacement for Sand Based Cement?

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**Students Name(s):** Kasey Moore  
**School:** American Heritage School of Boca/Delray, **Region:** Palm Beach  
**Title:** Vitamin C in Oranges over Elapsed Time

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**Students Name(s):** Taufeeq Chowdhury  
**School:** Leaders Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange  
**Title:** From Dull to Dazzling

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**Students Name(s):** Alexander Hsu  
**School:** Lincoln Middle School, **Region:** Alachua  
**Title:** Minimizing Teeth Stains

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### Second Place

**Students Name(s):** Keerthi A Chandran  
**School:** North Naples Middle School, **Region:** Collier  
**Title:** Are Sugar Substitutes a Stretch?

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**Students Name(s):** Christina L Sun  
**School:** Herbert H. Hoover Middle School, **Region:** Brevard: Intracoastal  
**Title:** The Antibacterial Effect of a Crystal Violet Gold Nanoparticle Coating

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**Students Name(s):** Will W Cornell  
**School:** Hardee Junior High School, **Region:** Heartland  
**Title:** Does the Type of Nitrogen Applied Foliarly to Bell Peppers (*Capsicum annum* group) Affect the Uptake of Nitrogen?

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**Students Name(s):** Rudra A Patel

**School:** Liberty Middle School, **Region:** Hillsborough

**Title:** 65mg FeSO<sub>4</sub> or is it?

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**First Place**

**Students Name(s):** Alexander L Ferland

**School:** Andrew Jackson Middle School, **Region:** Brevard: Mainland

**Title:** Environmental Conditions Affecting Corrosion of Launch Structures in a Real Launch Environment

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**Students Name(s):** Anneliese C Hsiao

**School:** American Heritage School, **Region:** Broward

**Title:** The Effect of a Hot Car Interior on Hand Sanitizer Alcohol Content

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## Junior

## Earth & Environmental Sciences

### Recognition

**Students Name(s):** Paige Knoth

**School:** Pine Ridge Middle School, **Region:** Collier

**Title:** Iron vs Algae Density

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**Students Name(s):** Hudson M Krasnick

**School:** Herbert H. Hoover Middle School, **Region:** Brevard: Intracoastal

**Title:** Roofing Materials and Their Effect on Solar Energy Output and Inside Temperature

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**Students Name(s):** Alexia P Politis

**School:** Aventura Waterways K-8 Center, **Region:** South Florida

**Title:** Designing the Best Storm Drain

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**Students Name(s):** Isabella V Robaina

**School:** Ruth K. Broad Bay Harbor K-8 Center, **Region:** South Florida

**Title:** Heat Coefficient Reduction in Windows

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### Honorable Mention

**Students Name(s):** Angelika M Morales

**School:** Norman S. Edelcup Sunny Isles Beach K-8 Community School, **Region:** South Florida

**Title:** Death of the Duckweed

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**Students Name(s):** Abhith Kasala

**School:** Abraham Lincoln Middle School, **Region:** Alachua

**Title:** Global Plastic Pollution

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**Students Name(s):** Maria Urakawa

**School:** Three Oaks Middle School, **Region:** Thomas Alva Edison

**Title:** Does Hydrogen Peroxide Save Aquatic Animals from Toxic Algal Blooms?

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**Students Name(s):** Cameron Brown

**School:** Rampello Downtown Partnership K-8, **Region:** Hillsborough

**Title:** Determining the Sources of Excess Phosphate and Nitrate Concentrations in the Upper Hillsborough River

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### Fourth Place

**Students Name(s):** Sebastian Davis

**School:** Pasco Middle School, **Region:** Pasco

**Title:** Saving the Earth One Volt at a Time!

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**Students Name(s):** William T White

**School:** Blessed Trinity Catholic School, **Region:** Big Springs

**Title:** Do UPF Shirts Hold Their Protection?

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**Students Name(s):** Isabella Calhoun

**School:** Saint Joseph Catholic School, **Region:** Martin

**Title:** Compost: Nature's Fertilizer

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**Students Name(s):** Nina Goyal  
**School:** Hidden Oaks Middle School, **Region:** Martin  
**Title:** Greenhouse Gases Showdown

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**Students Name(s):** Flora Jane Freer  
**School:** Westwood Middle School, **Region:** Alachua  
**Title:** How Does the Streamflow of a River Affect the Number of Microplastics Collected?

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**Students Name(s):** Thomas P Cratem; Caroline N Kartsonis  
**School:** San Jose Catholic School, **Region:** Northeast Florida  
**Title:** Removing Oil from Water

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### Third Place

**Students Name(s):** Rani V Gupta  
**School:** David C. Hinson Middle School, **Region:** Tomoka  
**Title:** Does Adding Natural Starch Prevent Soil Erosion?

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**Students Name(s):** Daniel M Jacob  
**School:** Academy at the Lakes, **Region:** Pasco  
**Title:** Split Decision: How Do Temperature-Based Variables Affect Planarian Regeneration?

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**Students Name(s):** Keira G Fahy  
**School:** New River Middle School, **Region:** Broward  
**Title:** Microplastics In Our Sand

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**Students Name(s):** Sebastian McCoy  
**School:** Key Largo School, **Region:** Monroe  
**Title:** Lighting Up the Sky!

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### Second Place

**Students Name(s):** Gianna C Frino  
**School:** Pine Ridge Middle School, **Region:** Collier  
**Title:** The Inhibitory Effects of Environmentally Safe Essential Oil Compounds on the Proliferation of *Cyanobacteria* (Blue-Green Algae)

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**Students Name(s):** Laila R. Rozenberg  
**School:** American Heritage School, **Region:** Broward  
**Title:** The Effects of PCB's and PFA's on the Neurological Development of Zebrafish Embryos

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**Students Name(s):** Monish Saravana Kumar Divya Sundari  
**School:** Orlando Science Middle School, **Region:** Dr. Nelson Ying Expo - Orange  
**Title:** Ocean Acidification: Could Nanotechnology Cause Macro Problems

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### First Place

**Students Name(s):** Alynza I McBride  
**School:** South Sumter Middle School, **Region:** Big Springs  
**Title:** Can Hydrologic Records Be Reconstructed Using Tree Rings from the Upper Withlacoochee River?

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**Students Name(s):** Kurukulasuriya Fernando  
**School:** Paul Laurence Dunbar Middle School, **Region:** Thomas Alva Edison  
**Title:** Microplastic Interaction in Aquatic Primary Consumers: Potential for Biomagnification

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## Junior

## Engineering

### Recognition

**Students Name(s):** Shyanne M Durst  
**School:** Wildwood Middle High School, **Region:** Big Springs  
**Title:** Surface Groundwater Filtration

**Students Name(s):** Elie Ciril  
**School:** American Heritage School, **Region:** Broward  
**Title:** Energy Storage Levels of Different Types of Supercapacitors

**Students Name(s):** Alexa G Shamus  
**School:** Pembroke Pines Charter Middle School, **Region:** Broward  
**Title:** Understanding Dog Body Language

### Honorable Mention

**Students Name(s):** Jainish H Patel  
**School:** East Ridge Middle School, **Region:** Lake  
**Title:** Project OxiDrone

**Students Name(s):** Joshua Bonilla Grillo; Conner Quinlan; Aiden Trego  
**School:** Electa Arcotte Lee Middle School , **Region:** Manatee STEM Competition  
**Title:** Prosthetic Hand Test

**Students Name(s):** Shuhuai Xu  
**School:** West Shore Junior/Senior High School, **Region:** Brevard: South  
**Title:** The Effect of Ram on the Number of Tabs You Are Able to Open

**Students Name(s):** Rylie A Muldoon; Ania Villas  
**School:** Sacred Heart Catholic School, **Region:** Northeast Florida  
**Title:** Flood Prevention: Sandbags vs Polyvinyl Chloride

### Fourth Place

**Students Name(s):** Michael D Ribay  
**School:** Howard Middle School, **Region:** Big Springs  
**Title:** The Optimal Arrangement of Solar Cells on a Mendocino Motor

**Students Name(s):** Gustavo D Spencer  
**School:** Seminole Science Charter School, **Region:** Seminole  
**Title:** Carrier Collision Catastrophe!

**Students Name(s):** Tiffani R Gay  
**School:** Orlando Science Middle School, **Region:** Dr. Nelson Ying Expo - Orange  
**Title:** Which Method of Biomedical Waste Disposal Is Most Efficient in Protecting Frontline Workers from Needle Injuries?

**Students Name(s):** Samuel S Nye  
**School:** Green Cove Springs Junior High School, **Region:** Clay Rotary  
**Title:** Breaking Point

**Students Name(s):** Molly V Adams

**School:** Westwood Middle School, **Region:** Alachua

**Title:** How Does the Shape of Sediment Affect the Steepness of a Hill?

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**Third Place**

**Students Name(s):** Braden M Miller

**School:** Pine Ridge Middle School, **Region:** Collier

**Title:** Wing Airfoil Designs vs Climb, Stall and Recovery Characteristics

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**Students Name(s):** Kaylee Smith

**School:** Challenger K8 School of Science and Mathematics, **Region:** Hernando

**Title:** Can We TRUSS It?

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**Students Name(s):** Ronnie Townson

**School:** Resurrection Catholic School, **Region:** Polk

**Title:** How Do Different Wings Affect Aerodynamics?

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**Students Name(s):** Meredith A Reser

**School:** Hill-Gustat Middle School, **Region:** Heartland

**Title:** The Effects of Temperature on the Strength of Polylactic Acid Filament

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**Second Place**

**Students Name(s):** David K Young

**School:** Herbert H. Hoover Middle School, **Region:** Brevard: Intracoastal

**Title:** Incorporating Mars Simulant into a Thermoplastic Polymer to 3D Print an Insulative and Structurally Sound Mars Habitat

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**Students Name(s):** Landon Dodd

**School:** Windy Hill Middle School, **Region:** Lake

**Title:** Toilet Trouble

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**First Place**

**Students Name(s):** Emma York

**School:** Freedom Crossing Academy , **Region:** St. Johns

**Title:** Testing the Efficiency of Different Curvatures of the Blades of a Savonius Wind Turbine

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## Junior

## Environmental Engineering

### Recognition

**Students Name(s):** Heidi R Van Antwerpen

**School:** Holley Navarre Middle School, **Region:** West Panhandle

**Title:** Solar Disco Fan

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**Students Name(s):** Saharsh Pothu

**School:** Abraham Lincoln Middle School, **Region:** Alachua

**Title:** How Well Do Different Materials Purify Water?

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**Students Name(s):** Sarah A Engel

**School:** Saint Andrew Catholic School, **Region:** Thomas Alva Edison

**Title:** Oil and Water Don't Mix

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### Honorable Mention

**Students Name(s):** Luke T Lawhorne

**School:** Bishop Larkin Catholic School, **Region:** Pasco

**Title:** Sharks of Steel

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**Students Name(s):** Pranav Rai

**School:** Archimedean Middle Conservatory, **Region:** South Florida

**Title:** Ferrofluids to the Rescue!

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**Students Name(s):** Justin P Mills

**School:** Westpine Middle School , **Region:** Broward

**Title:** Anaerobic Biogas Production

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### Fourth Place

**Students Name(s):** Kathryn Rogers

**School:** Dr. David L. Anderson Middle School, **Region:** Martin

**Title:** Saving with Solar

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**Students Name(s):** Bianca Bernhard

**School:** The Weiss School, **Region:** Palm Beach

**Title:** Comparing the Efficiencies of Different Methods of Biological and Technological Carbon Sequestration

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**Students Name(s):** Gabriella Weiner

**School:** Saint Mary Catholic School , **Region:** Brevard: Mainland

**Title:** Removing Microplastics from The Ocean

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**Students Name(s):** Aditi Swain

**School:** Orlando Science Middle School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Eco-friendly Water Purifier

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**Students Name(s):** Kathryn A McNeill

**School:** Green Cove Springs Junior High School, **Region:** Clay Rotary

**Title:** How Temperature Affects Solar Cells

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**Third Place**

**Students Name(s):** Sharanya Natarajan

**School:** Edgewood Jr/Sr High School, **Region:** Brevard: Intracoastal

**Title:** Suppress that Algae: Mitigating the Effects of Harmful Algal Blooms through Preemptive Detection and Suppression

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**Students Name(s):** Colt Stevens

**School:** Rocky Bayou Christian School, **Region:** East Panhandle

**Title:** Building the Most Effective Sea Wall for Mitigating Tsunami Damage

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**Students Name(s):** Liam Schnur

**School:** The Weiss School, **Region:** Palm Beach

**Title:** Evaluating Hydrocarbon Absorption of Various Textiles for Use in Oil Spill Mitigation.

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**Students Name(s):** Elizabeth Nowicki

**School:** Oak View Middle School, **Region:** Alachua

**Title:** Oil Spills: Hair Today Gone Tomorrow

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**Second Place**

**Students Name(s):** Mehak Singh

**School:** Orlando Science Middle School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** What Makes a Stronger and Flexible Bioplastic?

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**Students Name(s):** Makana O Salim-Uesi

**School:** Turner/ Bartels K-8 School, **Region:** Hillsborough

**Title:** Designing a Sustainable Water Collection and Filtration System for Water-Stressed Communities

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**First Place**

**Students Name(s):** Moitri Santra

**School:** Jackson Heights Middle School, **Region:** Seminole

**Title:** Innovative Engineering Tools for Controlling Harmful Algal Bloom (HAB): Year 2

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**Grand Award Winner**

**Students Name(s):** Moitri Santra

**School:** Jackson Heights Middle School, **Region:** Seminole

**Title:** Innovative Engineering Tools for Controlling Harmful Algal Bloom (HAB): Year 2

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## Junior Intelligent Machines, Robotics, & Systems Software

### Recognition

**Students Name(s):** Ethan H Muller

**School:** Creekside Middle School, **Region:** Tomoka

**Title:** Distance Learning Dilemma: How Do Various Wi-Fi Boosters Affect Internet Speed?

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**Students Name(s):** Aneesha Guna

**School:** Edgewood Jr/Sr High School, **Region:** Brevard: Intracoastal

**Title:** Empeers (Empower Peers)

### Honorable Mention

**Students Name(s):** Zara I Serrano-Diaz

**School:** Orlando Science Middle School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Which Brand of Battery Makes the Robot Last Longer?

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**Students Name(s):** Juliana J Weldon

**School:** Christ the King Catholic School, **Region:** Northeast Florida

**Title:** Typing Made Easy: A Coding Project

### Fourth Place

**Students Name(s):** Vyom Bhandari

**School:** Joseph L. Carwise Middle School, **Region:** Pinellas

**Title:** Phishing Blocker

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**Students Name(s):** Benjamin Kessler

**School:** The Weiss School, **Region:** Palm Beach

**Title:** Comparison of Programming Methods for Computer Solutions to Sudoku Puzzles

### Third Place

**Students Name(s):** Keaton D Smith

**School:** Herbert H. Hoover Middle School, **Region:** Brevard: Intracoastal

**Title:** Autonomous Device to Locate and Eradicate Cyanobacteria (Year 2)

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**Students Name(s):** Varun Singh

**School:** Dr. David L. Anderson Middle School, **Region:** Martin

**Title:** Busted! Monitoring Hand Hygiene with Smart RFID Technology: Part 2

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**Students Name(s):** Patrick O'Leary

**School:** A.D. Henderson University School, **Region:** Palm Beach

**Title:** Can an Underwater Camera be Attached to a Buoy to Identify Sharks Using a Monorail System that Can Alert People at Local Beaches When a Shark Is Approaching?

### Second Place

**Students Name(s):** Meghna Vikram

**School:** Sanford Middle School, **Region:** Seminole

**Title:** Identical Identity?



**Students Name(s):** Lucas Sarabjit

**School:** Stone Magnet Middle School, **Region:** Brevard: South

**Title:** Designing, Building, and Coding a Human Recognition Robot for Area Management

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**First Place**

**Students Name(s):** Sierra R Leinenbach

**School:** Sanford Middle School, **Region:** Seminole

**Title:** Building Structures Using Genetic Algorithms (Year 2)

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## Junior

## Mathematics & Computational Sciences

### Recognition

**Students Name(s):** Ace j Stein

**School:** iPrep Academy North, **Region:** South Florida

**Title:** The Unification of the 4 Quantum Numbers: Exponential Smoothing for a Fifth Quantum Number

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**Students Name(s):** Teymur Abdulla

**School:** West Shore Junior/Senior High School, **Region:** Brevard: South

**Title:** Utilizing Eulerian Path for DNA Sequencing: Year 2

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### Honorable Mention

**Students Name(s):** Louis B St. Petery

**School:** Sebastian River Middle School, **Region:** Indian River

**Title:** The Speedy Solution

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### Fourth Place

**Students Name(s):** Miguel A Secillano

**School:** Howard Middle School, **Region:** Big Springs

**Title:** Throwing Darts to Derive the Value of Pi

---

**Students Name(s):** Simon T Chung

**School:** Sanford Middle School, **Region:** Seminole

**Title:** Who Will Be the Next President? A Linear Regression Model Predicting the US Presidential Result

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### Third Place

**Students Name(s):** Benjamin Leptich

**School:** DeLaura Middle School, **Region:** Brevard: Intracoastal

**Title:** Execution Speed of Interpreted vs Compiled Computer Programs

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### Second Place

**Students Name(s):** Eoghan Mcivor

**School:** Polo Park Middle School, **Region:** Palm Beach

**Title:** Comparing Programming Languages

---

### First Place

**Students Name(s):** Hunter G Cook

**School:** Sebastian Charter Junior High School, **Region:** Indian River

**Title:** Masks, Masks, and More Masks

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## Junior

## Microbiology

### Recognition

**Students Name(s):** Carter B Deloach

**School:** International Community School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Can an Isolated T4 Living Bacteriophage Successfully Kill a Colony of K12 *E.coli* more Effectively than Common Antibiotics?

---

**Students Name(s):** River Ernest-White

**School:** Westwood Middle School, **Region:** Alachua

**Title:** How Does the Temperature Affect the Survival Rate of Tardigrades?

### Honorable Mention

**Students Name(s):** Fatima B Abu Khaled

**School:** Pasco Middle School, **Region:** Pasco

**Title:** Best Bacteria Blocker

### Fourth Place

**Students Name(s):** Noella R Lipham

**School:** Wildwood Middle High School, **Region:** Big Springs

**Title:** Which Antibiotic Will Be More Efficient When Fighting Against *E.coli* K-12?

---

**Students Name(s):** Brianna Marturano

**School:** Home School , **Region:** Palm Beach

**Title:** Is *Pseudomonas fluorescens* the answer to Environmental Pollution?

### Third Place

**Students Name(s):** John Lee

**School:** Jackson Heights Middle School, **Region:** Seminole

**Title:** A Novel Artificial Reflector for Effective *E.Coli* Disinfection Using UV

---

**Students Name(s):** Swara Patel

**School:** Carrollwood Day School, **Region:** Hillsborough

**Title:** Innovative Approach to Terraforming Mars using Cyanobacteria

### Second Place

**Students Name(s):** Tracey Q Chen

**School:** Herbert H. Hoover Middle School, **Region:** Brevard: Intracoastal

**Title:** Seaweed Supplements for Agriculture?

### First Place

**Students Name(s):** Dhruva R Sharma

**School:** Paul Laurence Dunbar Middle School, **Region:** Thomas Alva Edison

**Title:** Protective Efficiency of Masks in Preventing the Spread of COVID-19



## Junior

## Physics & Astronomy

### Recognition

**Students Name(s):** Story L Novotny; Lilo A Vuong

**School:** Brown Barge Middle Schol, **Region:** West Panhandle

**Title:** Break It! How Much Force Is Required to Break Taekwondo Boards?

---

**Students Name(s):** Lina Dos Santos

**School:** Westwood Middle School, **Region:** Alachua

**Title:** How Does the Type of Material Affect How Much Water it Soaks Up?

---

**Students Name(s):** Mihir Sonthi

**School:** Julia Landon College Preparatory Middle School, **Region:** Northeast Florida

**Title:** Using Artificial Gravity to Simulate Gravitational Force on Earth

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**Students Name(s):** Davis R Wold

**School:** Trafalgar Middle School, **Region:** Thomas Alva Edison

**Title:** Up, Up, and Away!

---

### Honorable Mention

**Students Name(s):** Noah F Hernandez

**School:** Saint Edwards School, **Region:** Indian River

**Title:** The Effect of Current and Voltage on the Strength of an Electromagnet

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**Students Name(s):** Conor S Powell

**School:** Saint Edwards School, **Region:** Indian River

**Title:** Stop. Drop. Rebound. A Study Into the Relationship Between the Drop and Rebound Height of a Ball.

---

**Students Name(s):** Caiden R Chouinard

**School:** Citrus Springs Middle School, **Region:** Citrus

**Title:** To Stretch or Not to Stretch?

---

### Fourth Place

**Students Name(s):** Jose M Carvajal-Beltran

**School:** Wildwood Middle High School, **Region:** Big Springs

**Title:** Let's ENLIGHTen on Night Insects!

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**Students Name(s):** Skye A Clayton

**School:** Sebastian River Middle School, **Region:** Indian River

**Title:** How Does the Temperature of a Magnet Affect Its Strength?

---

**Students Name(s):** Sienna L Mallon

**School:** Saint Edwards School, **Region:** Indian River

**Title:** How Voltage of Battery Affects Heat Energy Absorbed

---

**Students Name(s):** Zachary R Samuels

**School:** Pembroke Pines Charter Middle School, **Region:** Broward

**Title:** Electromagnetic Radiation and Smartphones

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**Students Name(s):** Austin R Walker  
**School:** Hardee Junior High School, **Region:** Heartland  
**Title:** Does the Flowrate of Stargon Affect the Quality of a MIG Weld?

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**Third Place**

**Students Name(s):** Kush Gulati  
**School:** North Naples Middle School, **Region:** Collier  
**Title:** Astrophotography : How Air Quality Affects Detail in Telescopic Images of Space Objects

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**Students Name(s):** Bella Overbough  
**School:** Resurrection Catholic School, **Region:** Polk  
**Title:** Does it Ink?

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**Students Name(s):** Su O'Brien  
**School:** IDEAL School of Advanced Learning , **Region:** Palm Beach  
**Title:** Water Power

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**Students Name(s):** Arvid C Vaidyanathan  
**School:** Sanford Middle School, **Region:** Seminole  
**Title:** Photometer Measurements of the Rayleigh Light Scattered Intensity of Different Concentrations of Covid-19 Sized Nanoparticles

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**Second Place**

**Students Name(s):** Sofia E Teifeld  
**School:** Nova Southern University School, **Region:** Broward  
**Title:** I Guess That's Why They Call it the Blues

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**Students Name(s):** Cara Mortimer  
**School:** Trinity Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange  
**Title:** Investigating Fluid Dynamics: The Mystery of a Ball in Water

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**Students Name(s):** Harlow Knowles  
**School:** Westwood Middle School, **Region:** Alachua  
**Title:** How Do Different Aerodynamic Clay Shapes Affect a Smoke Pattern in a Wind Tunnel

---

**First Place**

**Students Name(s):** Enzo B Carter  
**School:** Herbert H. Hoover Middle School, **Region:** Brevard: Intracoastal  
**Title:** The Effectiveness of BBO Crystals in Quantum Ghost Imaging

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**Students Name(s):** Emily Tsiros  
**School:** Archimedean Middle Conservatory, **Region:** South Florida  
**Title:** Flames in Microgravity

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**Grand Award Winner**

**Students Name(s):** Enzo B Carter  
**School:** Herbert H. Hoover Middle School, **Region:** Brevard: Intracoastal  
**Title:** The Effectiveness of BBO Crystals in Quantum Ghost Imaging

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## Junior

## Plant Sciences

### Recognition

**Students Name(s):** Jaycee M Mueller

**School:** South Sumter Middle School, **Region:** Big Springs

**Title:** Can the Tomato Take the Heat?

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**Students Name(s):** Bhav Jain

**School:** Don Estridge High Tech Middle School, **Region:** Palm Beach

**Title:** What Is the Effect of Acid Rain on Plants?

---

**Students Name(s):** Elliot MeDermed

**School:** Trinity Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** How Florida Residents Can Help Solve the Algae Bloom Crisis

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### Honorable Mention

**Students Name(s):** John M Behanan

**School:** Seminole Science Charter School, **Region:** Seminole

**Title:** The Pull of Magnets

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**Students Name(s):** Cylar P Robinson; Kelly L Burton; Jonaz Watson

**School:** Fort White High School, **Region:** Suwannee Valley

**Title:** The Effect of Organic and Inorganic Fertilizers on Collard Green Growth and Soil Health

---

### Fourth Place

**Students Name(s):** Catherine Zhao

**School:** Bak Middle School of the Arts, **Region:** Palm Beach

**Title:** Storing Strawberries to Maintain Freshness

---

**Students Name(s):** Mei Ling Q. Jaeger

**School:** Parkway Middle School, **Region:** Broward

**Title:** Does Carbon Monoxide Affect Plant Health

---

**Students Name(s):** Makayla S Mitchell

**School:** Trafalgar Middle School, **Region:** Thomas Alva Edison

**Title:** Red Light, Yellow Light, Green Light (Does the Color of Light Affect Plant Growth?)

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### Third Place

**Students Name(s):** Ben T Harrison

**School:** Academy at the Lakes, **Region:** Pasco

**Title:** Does Electrifying a Plant Increase Its Speed of Growth?

---

**Students Name(s):** Amanda M Struble

**School:** Highland Oaks Middle School, **Region:** South Florida

**Title:** The Effect of Climate Change on Seeds

---

**Students Name(s):** Samuel W Lauerman

**School:** Westwood Middle School, **Region:** Alachua

**Title:** How Does the Type of Liquid Given to a Pea Seed Affect its Growth?

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**Second Place**

**Students Name(s):** Emma J Johnson

**School:** Hardee Junior High School, **Region:** Heartland

**Title:** Does Molasses Affect the Growth of a Watermelon (*Citrullus lanatus*) Plant ?

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**Students Name(s):** Trenton S Keller

**School:** Hardee Junior High School, **Region:** Heartland

**Title:** Does the Time After Harvesting Affect the Amount of Ascorbic Acid (Vitamin C) in *Citrus sinensis*?

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**First Place**

**Students Name(s):** Alina Zaidi

**School:** Holy Trinity Episcopal Academy , **Region:** Brevard: Mainland

**Title:** How do Iron Levels Affect the Bacterial and Physical Growth of Spinach?

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## Senior

## Animal Sciences

### Recognition

**Students Name(s):** Caralina R Denis

**School:** Oviedo High School, **Region:** Seminole

**Title:** Correlation of Diet on Polystyrene Consumption Preferences of *Tenebrio molitor*

**Students Name(s):** Alex J Warren

**School:** Melbourne High School, **Region:** Brevard: South

**Title:** Global Warming's Effect on Soft Coral, *Xenia elongata*

### Honorable Mention

**Students Name(s):** Anabel Crisostomo

**School:** Wiregrass Ranch High School, **Region:** Pasco

**Title:** A Study of the Ammoniotelic-Ureotelic Pathway in *L. Terrestris* as a Means to Remediate Soil Damaged by Poor Irrigation Practices

**Students Name(s):** Jenna F Larson

**School:** Okeechobee High School, **Region:** Heartland

**Title:** Thermoregulation in Dairy Youngstock: Evaluating the Effectiveness of the Slick-Haired Gene on Heat Abatement in Commercial Holstein Calves

### Fourth Place

**Students Name(s):** Jordan R Harrow

**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida

**Title:** Demonstrating *D. Pulex* as Environmental Buffers to Acetylcholinesterase Inhibitors on *H. Littoralis*

**Students Name(s):** Matthew D Schinsing

**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida

**Title:** The Effect of Pesticides on Varroa Mite Numbers in *Apis Mellifera* Colonies

### Third Place

**Students Name(s):** Isabel E Sierra

**School:** Edgewood Jr/Sr High School, **Region:** Brevard: Intracoastal

**Title:** "Tri-pawed": Canine Prosthesis

**Students Name(s):** Sharon A. Fernandez

**School:** American Heritage School, **Region:** Broward

**Title:** The Effects of the Modulation by Melatonin on the Pathogenesis of Systemic Lupus Erythematosus on *Drosophila melanogaster*

**Students Name(s):** Nathan J Foo

**School:** West Shore Junior/Senior High School, **Region:** Brevard: South

**Title:** Utilization of Mechanically Simulated Kangaroo Care as a Novel Homeostatic Method to Treat Mice Carrying a Remutation of the Ppp1r13l Gene as a Model for Humans with Cardiomyopathy (Year 2)

### Second Place

**Students Name(s):** Emily Weimer

**School:** Palm Beach Central High School, **Region:** Palm Beach

**Title:** The Effect of Putative Beneficial Microorganisms for Coral (pBMC) In The Prevention of Disease and Bleaching (Year Two)



**Students Name(s):** Varun R Madan

**School:** Lake Highland Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Year 4: Developing a Multiple Linear Regression Model to Predict the Specific Effects of Various Lactic Acid Bacteria Dosages on the Overall Honey Bee Gut Microbiota and *Nosema caranae* Reduction

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**First Place**

**Students Name(s):** Kristi Biswas

**School:** Paxon School for Advanced Studies, **Region:** Northeast Florida

**Title:** Novel Geotaxic Data Show Botanical Therapeutics Slow Parkinson's Disease in A53T and ParkinKO Models

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**Grand Award Winner**

**Students Name(s):** Kristi Biswas

**School:** Paxon School for Advanced Studies, **Region:** Northeast Florida

**Title:** Novel Geotaxic Data Show Botanical Therapeutics Slow Parkinson's Disease in A53T and ParkinKO Models

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## Senior

## Behavioral & Social Sciences

### Recognition

**Students Name(s):** Julia Colan

**School:** MAST Academy at FIU, **Region:** South Florida

**Title:** The Effect of Medical Masks on the Perception of Facial Social Cues in Adolescents

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**Students Name(s):** Michael J Barker

**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida

**Title:** Study of Factors that Affect a Successful Grant Application

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### Honorable Mention

**Students Name(s):** Daria Sokolova

**School:** Spanish River Community High School, **Region:** Palm Beach

**Title:** The Effect of Phenotypic Variations on Shoaling Behavior in Zebrafish

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**Students Name(s):** Ella A Pilacek

**School:** Oviedo High School, **Region:** Seminole

**Title:** Impacts of Camera Usage on Memory of Students Attending via Video Conference Call

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### Fourth Place

**Students Name(s):** Rachel E Buksbaum

**School:** Wiregrass Ranch High School, **Region:** Pasco

**Title:** Jewish Identity Formation Processes within Reform Adolescents

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### Third Place

**Students Name(s):** Mandy Feuerman

**School:** American Heritage School of Boca/Delray, **Region:** Palm Beach

**Title:** An Examination of the Association Between Empathy and Adherence to Covid-19 Safety Guidelines

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**Students Name(s):** Dante A Martinez

**School:** Westminster Christian School, **Region:** South Florida

**Title:** The Effect of Constraining Eye Movements on Learning Gains and Retention

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**Students Name(s):** Lauren X Morgan

**School:** Sarasota High School, **Region:** Sarasota

**Title:** Impact of Protective and Risk Factors on Adolescent Responses to COVID-19

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### Second Place

**Students Name(s):** Brooke R Cohen-Pinsky

**School:** Satellite High School, **Region:** Brevard: Intracoastal

**Title:** Unmasking Microexpressions

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**Students Name(s):** Justin V Foster

**School:** West Shore Junior/Senior High School, **Region:** Brevard: South

**Title:** Effectiveness and Longevity of Messaging Strategies at Shifting Attitudes Towards Climate Science and Climate Policy.

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### First Place

**Students Name(s):** Emilin M Mathew

**School:** American Heritage School, **Region:** Broward

**Title:** Digital Phenotyping Autism: Investigating Objective Vocal and Movement Quantification for Characterizing Autism Severity

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**Grand Award Winner**

**Students Name(s):** Emilin M Mathew

**School:** American Heritage School, **Region:** Broward

**Title:** Digital Phenotyping Autism: Investigating Objective Vocal and Movement Quantification for Characterizing Autism Severity

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## Senior

## Biomedical & Health Sciences

### Recognition

**Students Name(s):** Bianca R Nicholas

**School:** Wiregrass Ranch High School, **Region:** Pasco

**Title:** The Influence of Temperature on the Concentration of Hemoglobin in *Lumbricus terrestris* and *Eisenia fetida* Erythrocytes

**Students Name(s):** Luke D Meiers

**School:** West Port High School, **Region:** Big Springs

**Title:** Face Coverings: Which Are Friends and Which Are Foes?

**Students Name(s):** Maryam Imran

**School:** American Heritage School of Boca/Delray, **Region:** Palm Beach

**Title:** Developing an Artificial Neural Network as a Method for Real-Time Diagnosis and Detection of Atrial Fibrillation in Electrocardiograms

**Students Name(s):** Aum J Dhruv

**School:** Fort Myers High School, **Region:** Thomas Alva Edison

**Title:** Modeling the Effectiveness of Pre-Existing Sutures and a Novel Chitosan Approach in a Simulated, Biodegradable Environment

### Honorable Mention

**Students Name(s):** Harsh Mehta

**School:** F. W. Springstead High School, **Region:** Hernando

**Title:** Natural Antioxidants: A Possibility to Decrease Cancer, Cardiovascular and Neurodegenerative Diseases

**Students Name(s):** Akash Verma

**School:** Eastside High School, **Region:** Alachua

**Title:** Evaluating the Efficacy of Different Face Masks in Obstructing Respiratory Droplets Innovating a Sensor-based Technology to Maintain Social Distancing

**Students Name(s):** Bailey A Tinsley

**School:** Hardee Senior High School, **Region:** Heartland

**Title:** The Tempers of Water

**Students Name(s):** Olivia S Bailey

**School:** Sarasota High School, **Region:** Sarasota

**Title:** The Effect of Fabric Composition on the Efficacy of Water Droplet Transmission Suppression

### Fourth Place

**Students Name(s):** Jeremiah E Feizi

**School:** Satellite High School, **Region:** Brevard: Intracoastal

**Title:** Fucoic Acid as Additional Combatants to Cancer Development

**Students Name(s):** Cheyenne R Shirley

**School:** South Sumter High School, **Region:** Big Springs

**Title:** The Effects of Ketone Supplements on Reducing Postprandial Glucose Levels

**Students Name(s):** Haylee A Darling

**School:** Forest High School, **Region:** Big Springs

**Title:** Development of an Improved High Intensity Off-Grid Phototherapy System to Provide Treatment In Remote Regions of the World

**Students Name(s):** Melissa Erdem  
**School:** Hagerty High School, **Region:** Seminole  
**Title:** Comparative Analysis and Modeling of Cancer Survival Rates

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**Students Name(s):** Isabella A Buschini  
**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida  
**Title:** Observing the Impact of UV light on Chicken Embryo Eye Growth

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**Students Name(s):** Kassie L Greenan  
**School:** Sarasota High School, **Region:** Sarasota  
**Title:** Determining the Genetic Development of Human Ovarian Cancer Induced by Exposure to Bisphenol-A

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### Third Place

**Students Name(s):** Aiden Fong; Stephen A Kupcha; David P VanLue  
**School:** Ponte Vedra High School, **Region:** St. Johns  
**Title:** Testing for Water-Soluble Antimicrobial Compounds in Primitive Herbal Remedies

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**Students Name(s):** Prateek Gupta  
**School:** American Heritage School, **Region:** Broward  
**Title:** Identification and Analysis of Key Candidate Genes and Pathways in Lung Adenocarcinoma by Integrated Pathways in Lung Adenocarcinoma by Integrated Bioinformatics

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**Students Name(s):** Mahdere M. Yared  
**School:** Pine Crest School, **Region:** Broward  
**Title:** Investigating Differences in DRD4 Expression in a Comparison Analysis Between Young, Old, and Alzheimer's Frontal Cortex Brain Tissues

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**Students Name(s):** Aditi Shukla  
**School:** Buchholz High School, **Region:** Alachua  
**Title:** Precision Targeting and Brain Stimulation for Treating Depression

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**Students Name(s):** Thomas C Commander  
**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida  
**Title:** Using Nanoparticle-Based Magnetic Hypothermia to Hinder Planarian Regeneration

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### Second Place

**Students Name(s):** James Y Cai  
**School:** Miami Palmetto Senior High School, **Region:** South Florida  
**Title:** Neural-network Based Genomic Tests to Predict the Recurrence Risk of Breast Cancer

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**Students Name(s):** Isabela V Perdomo  
**School:** MAST Academy at FIU, **Region:** South Florida  
**Title:** A Mathematically Generated Bessel Function Based Ultrasonic Waveform Tractor Beam for Optimizing Blood Circulation

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**Students Name(s):** Shriya R Buragadda  
**School:** George S. Middleton High School, **Region:** Hillsborough  
**Title:** Identifying Blood-Based Biomarkers for Systemic Lupus Erythematosus (SLE)

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### First Place

**Students Name(s):** Diane Altidor  
**School:** Palm Beach Central High School, **Region:** Palm Beach  
**Title:** Determining the Effect of a Disulfiram Copper Complex on Drug Resistance in Metastatic Breast Cancer Cells Through Deletion of ALDH1 (A Three Year Study)

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**Students Name(s):** Madeline E Huberman

**School:** West Shore Junior/Senior High School, **Region:** Brevard: South

**Title:** Differential Expressions of WNT Pathway Proteins in Colorectal Carcinoma Metastasis to Liver Versus Lung

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**Grand Award Winner**

**Students Name(s):** Madeline E Huberman

**School:** West Shore Junior/Senior High School, **Region:** Brevard: South

**Title:** Differential Expressions of WNT Pathway Proteins in Colorectal Carcinoma Metastasis to Liver Versus Lung

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## Senior Cellular/Molecular Biology & Biochemistry

### Recognition

**Students Name(s):** Nathalie J Eckermann  
**School:** Saddlebrook Preparatory School , **Region:** Pasco  
**Title:** Alcoholic Photosynthesis

**Students Name(s):** Jonathan P Xavier  
**School:** Southeast High School, **Region:** Manatee STEM Competition  
**Title:** Impact of *Solanum tuberosum* Cultivar on Hydrogen Peroxide Decomposition

**Students Name(s):** Jackson L Whitchurch  
**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida  
**Title:** Measuring UV-C Energy Dissipation from UV-C LEDs

### Honorable Mention

**Students Name(s):** Anna M Beck  
**School:** Coral Reef Senior High School, **Region:** South Florida  
**Title:** Molecular Docking Study of the Ebolavirus Surface Glycoprotein to Develop Anti-Ebola Drug

**Students Name(s):** Anne Fang  
**School:** Lake Highland Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange  
**Title:** Developing a Molecular Scale DNA Nanochip for Educational Purposes, Phase II

**Students Name(s):** Joshua Selvan  
**School:** Hillsborough High School, **Region:** Hillsborough  
**Title:** Role of Mismatch Repair Gene hMSH2 in Malignant Glioma

### Fourth Place

**Students Name(s):** Aishwarya Ayyanathan  
**School:** American Heritage School of Boca/Delray, **Region:** Palm Beach  
**Title:** Developing an Convolutional Neural Network for Accurate and Inexpensive Lung Cancer Diagnosis

**Students Name(s):** Katelyn B Fry  
**School:** Oviedo High School, **Region:** Seminole  
**Title:** *Haloferax volcanii* Response to Low Oxygen Environment and UV Mutagenesis

**Students Name(s):** Laney Mulhollen  
**School:** Sarasota High School, **Region:** Sarasota  
**Title:** The Effect of Neuroprotection on Wound Healing Rates in an In Vitro TBI Model

### Third Place

**Students Name(s):** Neil Reddy  
**School:** Satellite High School, **Region:** Brevard: Intracoastal  
**Title:** Targeted Cancer Cell Weapons: Using CRISPR Genetic Engineering and SiRNA to Modify MCF7 Human Breast Cancer Cells as a Treatment Vector Year III

**Students Name(s):** Sandhya Kumar; Surabhi Kumar  
**School:** Lawton Chiles High School, **Region:** Capital  
**Title:** Extrathymic T-Cell Development in the Mesenteric Lymph Nodes of Mice

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**Students Name(s):** Camila Rimoldi Ibanez  
**School:** Sebring High School, **Region:** Heartland  
**Title:** Ultrasonic Planimals! Identifying Genes Associated with Coral Bioacoustics

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#### **Second Place**

**Students Name(s):** Julianna Lian  
**School:** Florida Atlantic University High School, **Region:** Palm Beach  
**Title:** Exploring ROS-mediated Inflammation with Polyphenol-rich *Sargassum sp.* and Incredibly Regenerative *D. dorocephala*

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**Students Name(s):** Julien J Wakim  
**School:** West Shore Junior/Senior High School, **Region:** Brevard: South  
**Title:** An In Silico Study on the Effects of DNA Replication Inhibitors on the Apoptosis of Multinucleated Giant Cancer Cells

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#### **First Place**

**Students Name(s):** Sarah Barksdale  
**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida  
**Title:** Machine Learning to Predict Response to Anti-PD1 Treatment in Melanoma Based on Genetic Biomarkers

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## Senior

## Chemistry

### Recognition

**Students Name(s):** Joshua D Kopp

**School:** Wiregrass Ranch High School, **Region:** Pasco

**Title:** A Novel Study on the Potential Application of Higher Efficiency Extraterrestrial Solar Cells: A Year Two Study

**Students Name(s):** Liya D Elan

**School:** Sarasota High School, **Region:** Sarasota

**Title:** The Effect of Amorphous Carbon Created by Sugar and Sulfuric Acid on Hydrogen Fuel Storage Cells

**Students Name(s):** Anya K Patidar

**School:** C. Leon King High School, **Region:** Hillsborough

**Title:** Silica-Supported Perovskite Oxides for Low Temperature Carbon Dioxide Conversion

### Honorable Mention

**Students Name(s):** Ivy Yang; Mei Bao-He

**School:** Saint Edwards School, **Region:** Indian River

**Title:** Measuring the Effect of Titanium (IV) Oxide Surface Modification on Hydrogen Production in a 5% Citric Acid-Water Aqueous Solution Reacting with Magnesium

**Students Name(s):** Sanjana Bhatt; Sahana Thayagabalu

**School:** Cypress Bay High School, **Region:** Broward

**Title:** Ocean's Declining pH: The Effects of Surface Agitation Aeration on Calcium Carbonate Dissolution Levels in Acidified Seawater

### Fourth Place

**Students Name(s):** Cayley McCloskey

**School:** Lely High School, **Region:** Collier

**Title:** How Does the Starting Temperature Affect the Time of Crystal Growth in a Reusable Hand Warmer? ( Sodium Acetate Trihydrate Solution)

**Students Name(s):** Andy Shar

**School:** Vanguard High School, **Region:** Big Springs

**Title:** Novel Synthesis and Microstructure Optimization of Facile, Robust, and Transparent Triboelectric Nanogenerators

**Students Name(s):** Layla G Auter

**School:** West Shore Junior/Senior High School, **Region:** Brevard: South

**Title:** Mitigating Harmful Algal Bloom Contributing Nutrients: Year Two Comparing the Effectiveness of the Amino Acid Derivative Cysteine Methyl-Ester Alongside Aluminum Sulfate to Reduce Aluminum and Soluble Reactive Phosphorus in Water Treatment in Anoxic and Oxidic Conditions

### Third Place

**Students Name(s):** Nolan Wen

**School:** American Heritage School of Boca/Delray, **Region:** Palm Beach

**Title:** The Effect of Cyanoacrylate on the Setting Time and Adhesive Strength of a Nitrocellulose Based Liquid Bandage: A Proof of Principle Study

**Students Name(s):** Harmanpreet Kaur

**School:** Medical Academy for Science and Technology, **Region:** South Florida

**Title:** Aluminum Hydroxide Concentrated Filtration Device Systems for the Removal of Phosphates to Combat Eutrophication in Aquatic Ecosystems.

**Students Name(s):** Anna R Velten

**School:** Okeechobee High School, **Region:** Heartland

**Title:** The Effects of Dissolving Polystyrene with D-Limonene on the Germination of Plants : A Fourth Year Study

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**Second Place**

**Students Name(s):** Aaron G Rubinow

**School:** Trinity Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Plant-based Bio-Plastics from Low-cost Materials

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**Students Name(s):** Sean R Ramsey

**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida

**Title:** The Properties of Martian Concrete with Molten Sulfur Binder

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**First Place**

**Students Name(s):** Vedant Karalkar

**School:** Eastside High School, **Region:** Alachua

**Title:** Fabrication of Napthalimide Chemosensor Using InkJet Printing on Cellulose Paper for Determination of Uric Acid and Metal in Solution

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**Grand Award Winner**

**Students Name(s):** Vedant Karalkar

**School:** Eastside High School, **Region:** Alachua

**Title:** Fabrication of Napthalimide Chemosensor Using InkJet Printing on Cellulose Paper for Determination of Uric Acid and Metal in Solution

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## Senior

## Earth & Environmental Sciences

### Recognition

**Students Name(s):** Sarah Garfield

**School:** Palm Beach Central High School, **Region:** Palm Beach

**Title:** The Effect of Predator-Induced Increases on CO<sub>2</sub> Sequestration in Bromeliad-Daphnia Reservoir Ecosystems

**Students Name(s):** Krithika Subramanian

**School:** Paul J. Hagerty High School, **Region:** Seminole

**Title:** Growth and Decay of Coral Due to Coral Bleaching as Identified by Machine Learning Analysis of Satellite Images

**Students Name(s):** Sami M Ramadan

**School:** West Shore Junior/Senior High School, **Region:** Brevard: South

**Title:** The Effects of Heavy Metals on Aquatic Organisms

**Students Name(s):** Miranda K Doro

**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida

**Title:** Pb (II) Filtration Using an Eco-Friendly Synthesized Ag Nanoparticle Enhanced Biosand Filter

### Honorable Mention

**Students Name(s):** Amy E King

**School:** Burns Science and Technology Charter School, **Region:** Tomoka

**Title:** Coagulation Flocculation Sedimentation Filtration of Microplastics

**Students Name(s):** Marisol R Enguidanos

**School:** Niceville High School, **Region:** East Panhandle

**Title:** Is It Possible to Create a Self-sufficient Solar Powered Filtration System to Reduce Coral Bleaching Using Natural Resources (Year 3)?

**Students Name(s):** Lorelei G Mohammadbhoj

**School:** Lecanto High School, **Region:** Citrus

**Title:** Microplastics Still Do Not Promote Gender Equality

**Students Name(s):** Hannah G Burbidge; Savannah S Still

**School:** Durant High School, **Region:** Hillsborough

**Title:** Anthropogenic Effects on Aquatic Life

### Fourth Place

**Students Name(s):** Stephan O Lindenthal

**School:** Saint Edwards School, **Region:** Indian River

**Title:** A Novel Model of Microplastics Pollution for Terrestrial Environments for *Drosophila melanogaster*

**Students Name(s):** Paige N Woodhouse

**School:** Academy of Environmental Science, **Region:** Citrus

**Title:** The Effects of Sunscreen Compounds on Our Native Eelgrass (*Vallisneria americana*)

**Students Name(s):** Tejavsi Kari

**School:** Palm Beach Central High School, **Region:** Palm Beach

**Title:** The Effect of Carbon Nanotubes and Oil Dispersants on the Oil Degrading Ability, Vitality, and Gene Expression of *A. borkumensis*

**Students Name(s):** Michael Brouse  
**School:** Spanish River Community High School, **Region:** Palm Beach  
**Title:** Behavioral Responses to Acute Caffeine Exposure in *Danio rerio*

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**Students Name(s):** Abdul-Jalil D Dania  
**School:** American Heritage School, **Region:** Broward  
**Title:** Evaluating the Economic and Social Ramifications from Sea Level Rise in the Florida Coastal Region in 2050 and Solutions to Alleviate Potential Damages

---

**Students Name(s):** Natalie C Rabil  
**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida  
**Title:** The Combined Toxicity of Lead Nitrate and Dibutyl Phthalate on Freshwater Amphipods

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### Third Place

**Students Name(s):** Camille A Duma  
**School:** Vanguard High School, **Region:** Big Springs  
**Title:** Utilization of *Manihot esculenta* Peels, Used Coffee Grounds, and Eggshells from *Gallus gallus* to Create Biodegradable Polymers

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**Students Name(s):** Minh K Lam  
**School:** Lake Mary Preparatory School, **Region:** Seminole  
**Title:** Fungi to the Rescue! Acid Rain Mycoremediation of Soil Using *Pleurotus ostreatus*

---

**Students Name(s):** Khushi Desai  
**School:** Deerfield Beach High school, **Region:** Broward  
**Title:** Evaluation of the Impact of Filter Media Effective Size on Removal Efficiency of Coagulated Colloidal Particles from Surface Water

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**Students Name(s):** Lily Sikorski; Alexa J VanSuch  
**School:** Sarasota High School, **Region:** Sarasota  
**Title:** Secretion of Microplastics on the Seafloor

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### Second Place

**Students Name(s):** Esther R Francom  
**School:** Viera High School, **Region:** Brevard: Mainland  
**Title:** Bamboozling Microplastic Runoff into the Indian Rive Lagoon - Year 3

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**Students Name(s):** Justin W Richburg  
**School:** Oviedo High School, **Region:** Seminole  
**Title:** Creating a Model Ecosystem to Analyze the Correlation between Shoal Grass (*Halodule wrightii*) and Epiphytic Diatoms: Year 5

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**Students Name(s):** Julia M Kagiliery  
**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida  
**Title:** The Creation and Practical Application of Industry Standards Water Analysis Via PXRF

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### First Place

**Students Name(s):** Alexander LaFortune  
**School:** Satellite High School, **Region:** Brevard: Intracoastal  
**Title:** Predictive Modeling of Tropical Cyclone Rapid Intensification by Analyzing Convective Patterns with Convolutional Neural Networks - Year Four

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**Students Name(s):** Sunny J You  
**School:** Miami Palmetto Senior High School, **Region:** South Florida  
**Title:** A Novel Deep Learning Model for Estimating Tropical Cyclone Intensity from Satellite Images

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### Grand Award Winner

**Students Name(s):** Alexander LaFortune

**School:** Satellite High School, **Region:** Brevard: Intracoastal

**Title:** Predictive Modeling of Tropical Cyclone Rapid Intensification by Analyzing Convective Patterns with Convolutional Neural Networks - Year Four

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## Senior

## Engineering

### Recognition

**Students Name(s):** Jimmy Joseph

**School:** Florida Atlantic University High School, **Region:** Palm Beach

**Title:** Utilizing Solar Tracking Technologies to Provide Cheap and Efficient Energy

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**Students Name(s):** Michael Pitts

**School:** Suncoast Community High School, **Region:** Palm Beach

**Title:** Creating Hydrogen through Solar-Powered Electrolysis

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**Students Name(s):** Antonio G Valentino

**School:** Bishop Kenny High School, **Region:** Northeast Florida

**Title:** Conquering Concrete - Year III

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### Honorable Mention

**Students Name(s):** Catherine Lee

**School:** Palm Beach Central High School, **Region:** Palm Beach

**Title:** Decreasing Acoustic Footprint of Marine Propellers, Using Geometric Modifications.

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**Students Name(s):** Matthew H Kish

**School:** West Shore Junior/Senior High School, **Region:** Brevard: South

**Title:** Comparing Reinforced Polymers to Traditional Steel for Bridge Construction

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**Students Name(s):** Madeline J Perry

**School:** St. Cloud High School, **Region:** Osceola

**Title:** Weighted Wings: Analyzing Airfoil Performance in Tropospheric Conditions

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### Fourth Place

**Students Name(s):** Steven Vokoun

**School:** South Fork High School, **Region:** Martin

**Title:** Creation of a Highly Efficient Surface ROV Invoking Cylindrical Solar Panels Year 5

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**Students Name(s):** Lucja Stawikowska

**School:** Florida Atlantic University High School, **Region:** Palm Beach

**Title:** Determination of the Parameters Influencing Cooling Fan Efficiency

---

**Students Name(s):** Taehee Um

**School:** Oviedo High School, **Region:** Seminole

**Title:** Characterizing the Electrical and Thermal Performance of a Circular Exhaust Pipe Thermoelectric Generator

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**Students Name(s):** Quinn M O'Connor

**School:** Sarasota High School, **Region:** Sarasota

**Title:** Comparing the Effectiveness of a 3D Printed vs an Industrial Agarose Gel Electrophoresis Chamber

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### Third Place

**Students Name(s):** Isabella Weiner

**School:** Holy Trinity Episcopal Academy , **Region:** Brevard: Mainland

**Title:** In Situ Resource Utilization of Martian Regolith for Construction - Year 4

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**Students Name(s):** Niamh Trotter

**School:** Satellite High School, **Region:** Brevard: Intracoastal

**Title:** 3D Printed Touch: Year 3

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**Students Name(s):** Jay Chavakula

**School:** Canterbury School, **Region:** Thomas Alva Edison

**Title:** The Utilization of Dimples to Reduce Wind Load on Parabolic Structures

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#### **Second Place**

**Students Name(s):** Sierra Stocker

**School:** Pine Crest School, **Region:** Broward

**Title:** Using Electrical Stimulation to Provide Reliable Haptic Feedback in Virtual Object Classification Tasks

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**Students Name(s):** Sebastian D Kouchakjy

**School:** Orange Park High School, **Region:** Clay Rotary

**Title:** Muscle Controlled Exoskeleton

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#### **First Place**

**Students Name(s):** Benjamin M York

**School:** Creekside High School, **Region:** St. Johns

**Title:** Designing and Testing a Novel 25% Degree of Reaction Steam Turbine

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## Senior

## Environmental Engineering

### Recognition

**Students Name(s):** Sophia M Weiner

**School:** Holy Trinity Episcopal Academy , **Region:** Brevard: Mainland

**Title:** Construction Utilization of Indian River Muck - Year 3

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**Students Name(s):** Heidi E Kinsey

**School:** Fort Myers High School, **Region:** Thomas Alva Edison

**Title:** A Comparison of Domestic Dryer Contributions to Previous Domestic Washer Data of Microplastic Fiber Emissions in Waste Water Generated from Synthetic Textiles

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### Honorable Mention

**Students Name(s):** Sarah A Habona

**School:** Florida Atlantic University High School, **Region:** Palm Beach

**Title:** Using Sargassum and Flaxseed to Create a Mucilaginous Microplastic Filter

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**Students Name(s):** Sammy M Habboub

**School:** Melbourne High School, **Region:** Brevard: South

**Title:** Harvesting Piezoelectric Energy Using Grown Zinc Oxide Nanowires Upon A Nanoporous Polycarbonate Template

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### Fourth Place

**Students Name(s):** Rachel A Forgas

**School:** Wiregrass Ranch High School, **Region:** Pasco

**Title:** The Utilization of *Bambusa vulgaris* Biochar to Address Runoff Contamination in Ecosystems Damaged by Intense Forest Fires

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**Students Name(s):** Nicole H Norwine

**School:** Sarasota High School, **Region:** Sarasota

**Title:** The Optimization of Forward Osmosis Desalination (Year 3)

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### Third Place

**Students Name(s):** Jonathan C Walker

**School:** Rutherford High School, **Region:** East Panhandle

**Title:** Development and Implementation of a Bio-based Filter to Mitigate the Effusion of Harmful Pollutants from Internal Combustion Engines and Combustion Processes

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**Students Name(s):** Ashesh Amatya

**School:** Alexander W. Dreyfoos School of the Arts, **Region:** Palm Beach

**Title:** Artificial Neural Network Modeling of Harmful Algal Blooms in Lake Okeechobee

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**Students Name(s):** Angela Gao

**School:** F. W. Buchholz High School, **Region:** Alachua

**Title:** Life Cycle Analysis of the Environmental Impact of Disposable Drinking Straws: A National Scale Gabi Application

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### Second Place

**Students Name(s):** Zoe F Diederich

**School:** Maritime and Science Technology Academy, **Region:** South Florida

**Title:** An Efficient and Cost-Effective Cooling System for Nuclear Power Plants

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**Students Name(s):** Ishika Nag

**School:** Oviedo High School, **Region:** Seminole

**Title:** Development of a Combinatory Filtration System for Pollution and Virus Abatement

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**First Place**

**Students Name(s):** Lavanya S Natarajan

**School:** Viera High School, **Region:** Brevard: Mainland

**Title:** Landfill SCADA System: A Nex Gen IoT Solution Engineered to Mitigate Fugitive Methane Emissions in Landfills via a Remote Supervisory Control and Data Acquisition System

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## Senior Intelligent Machines, Robotics, & Systems Software

### Recognition

**Students Name(s):** Gabriel D Ribay

**School:** Vanguard High School, **Region:** Big Springs

**Title:** MENACE, the Mastermind: Comparing the Effects of Positive Versus Negative Reinforcement on Machine Learning Systems

**Students Name(s):** Megan D. Yang

**School:** American Heritage School, **Region:** Broward

**Title:** Utilizing Reinforcement Learning and Deep Neural Networks to Optimize Non-pharmaceutical COVID-19 Interventions in Florida

### Honorable Mention

**Students Name(s):** Aanya Bhandari

**School:** Palm Harbor University High School, **Region:** Pinellas

**Title:** Bio-Bin

**Students Name(s):** Maya Neeranjan

**School:** American Heritage School, **Region:** Broward

**Title:** The Effectiveness of Deep Learning Models on the Detection of Pneumonia

### Fourth Place

**Students Name(s):** Aditya Kumar

**School:** Spanish River Community High School, **Region:** Palm Beach

**Title:** Creating a Prototype Device to Monitor Preliminary Symptoms of Sepsis

**Students Name(s):** Rylan S Andrews

**School:** Satellite High School, **Region:** Brevard: Intracoastal

**Title:** A Novel Approach to Calculating Orbital Mechanics with Machine Learning

**Students Name(s):** Alexander Wang

**School:** Trinity Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Using a Novel Semi-supervised Machine Learning Method to Improve Image Based Lung Cancer Diagnostic Algorithms

### Third Place

**Students Name(s):** Ashwin G Parthasarathy

**School:** American Heritage School of Boca/Delray, **Region:** Palm Beach

**Title:** Classification and Prediction of Head and Neck Squamous Cell Carcinomas Using Generative Adversarial Network Models

**Students Name(s):** Sruthi Sentil

**School:** James S. Rickards High School, **Region:** Capital

**Title:** A Machine Learning Tool for the Smartphone Based Rapid Detection of *Salanum lycopersium* (Tomato) Diseases Caused by Destructive Pathogenic Bacteria, Fungi, and Viruses

**Students Name(s):** Siddharth A Kini

**School:** Crooms Academy of Information Technology, **Region:** Seminole

**Title:** Using Machine Learning to Identify Metastatic Tissue in Histopathic Scans of Lymph Node Sections

### Second Place

**Students Name(s):** George D DeLong

**School:** Episcopal High School of Jacksonville, **Region:** Northeast Florida

**Title:** Engineering a Robot Arm with Computer Vision and Simulated Grabbing for Manipulation of Objects

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**First Place**

**Students Name(s):** Arko Ghosh

**School:** C. Leon King High School, **Region:** Hillsborough

**Title:** A Novel Approach to Citrus Disease Management: Leveraging Computer Vision, Machine Learning and Convolutional Neural Networks

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**Grand Award Winner**

**Students Name(s):** Arko Ghosh

**School:** C. Leon King High School, **Region:** Hillsborough

**Title:** A Novel Approach to Citrus Disease Management: Leveraging Computer Vision, Machine Learning and Convolutional Neural Networks

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## Senior

## Mathematics & Computational Sciences

### Recognition

**Students Name(s):** Evan L Karcher

**School:** Satellite High School, **Region:** Brevard: Intracoastal

**Title:** A Spatial Analysis of Photovoltaic Conversions to Obtain Carbon Neutrality

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**Students Name(s):** Deeksha Kumaresh

**School:** American Heritage School of Boca/Delray, **Region:** Palm Beach

**Title:** Using Different Machine Learning Classifiers to Examine the Relationship Between Prodromal Huntington's Disease and miRNAs

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### Honorable Mention

**Students Name(s):** Grace C Williams

**School:** Pensacola High School, **Region:** West Panhandle

**Title:** Using Mathematics to Research the West Nile Virus and Neuroinvasive Disease

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### Fourth Place

**Students Name(s):** Cemre S Kayisli

**School:** Wiregrass Ranch High School, **Region:** Pasco

**Title:** Analysis of the Regulatory Role of Small Nucleolar RNA and Small Nuclear Expression Pathways on the Pathogenesis of Preeclampsia

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**Students Name(s):** Maya S Chandar

**School:** Canterbury School of Fort Myers, **Region:** Thomas Alva Edison

**Title:** Development of a Novel Machine Learning Algorithm to Aid in Detection of Structural Characteristics of Alzheimer's Disease in MCI Patients

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### Third Place

**Students Name(s):** Shaurnav Ghosh

**School:** Pine Crest School, **Region:** Broward

**Title:** Determining the Optimal MRI Sequence for the Automatic Segmentation of Multiple Sclerosis Using Convolutional Encoder Networks

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**Students Name(s):** Noah B Jenkins

**School:** St. Cloud High School, **Region:** Osceola

**Title:** Developing Heteroscedastic Estimations of Volatility for the Valuation of Options Using the Black-Scholes Options Pricing Model

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### Second Place

**Students Name(s):** Tushar S Gona

**School:** C. Leon King High School, **Region:** Hillsborough

**Title:** Determining the Stick Index of Unexplored Families of  $(p, q)$  Torus Knots in the Cubic Lattice

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### First Place

**Students Name(s):** Asha M Reddy

**School:** Lake Highland Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** Implementation of Time Frequency Analysis for Seizure Localization: Phase II

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## Senior

## Microbiology

### Recognition

**Students Name(s):** Rowan B Klukosky

**School:** Satellite High School, **Region:** Brevard: Intracoastal

**Title:** Gene Expression and Cancer Progression

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**Students Name(s):** Olivia R Kessler; Dhruv R Krishna

**School:** Nova Southern University School, **Region:** Broward

**Title:** Addressing the Worldwide Threat of Diminishing Antibiotics through Discovery of Antibiotic Producing Bacteria from the Soil

### Honorable Mention

**Students Name(s):** Alina A Chacko

**School:** Southeast High School, **Region:** Manatee STEM Competition

**Title:** Testing the Effectiveness of Different Types of Chemicals in Inhibiting the Growth of *Lactobacillus acidophilus*

### Fourth Place

**Students Name(s):** Adi J Chauhan; Aryan S Taywade

**School:** James S. Rickards High School, **Region:** Capital

**Title:** A Ticking Time Bomb: Bioinformatics Analysis on Environmental *Serratia* Species to Assess the Emergence of Antibiotic and Virulence Traits

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**Students Name(s):** Madison N Adkins

**School:** Lincoln Park Academy, **Region:** St. Lucie

**Title:** How do Endophytic Bacteria Affect the Growth of Plant

### Third Place

**Students Name(s):** Angelina Ning

**School:** American Heritage School of Boca/Delray, **Region:** Palm Beach

**Title:** Testing the Extent of Synergistic Anti-biofilm Activity of *Galla chinensis* and Potentially Adjuvant Chemicals on *Escherichia coli* Biofilm Formation and Prefomed Biofilm

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**Students Name(s):** Natasha Mayorga

**School:** Florida Atlantic University High School, **Region:** Palm Beach

**Title:** Can Mycorrhizal Fungi Inhabit Mars?

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**Students Name(s):** Varsha Naga

**School:** Winter Springs High School, **Region:** Seminole

**Title:** Prevention of Healthcare Associated Infections Using Antibacterial Boron Carbonitride Nanoparticle Coating on Medical Devices

### Second Place

**Students Name(s):** Om D Patel

**School:** Eau Gallie High School, **Region:** Brevard: Mainland

**Title:** A Multi-Factor Study Deriving a Comprehensive Evaluation of Natural Antibiotic Hybrids Bound to Novel Nanoreactors in an Inorganic Model of an *Enterococcus faecalis* Infected Jejunum Cross-Analyzed through Static Biofilm Production and Quorum Sensing (Year 5)

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**Students Name(s):** Shloke Patel

**School:** Hillsborough High School, **Region:** Hillsborough

**Title:** In-vitro Evaluation of Herbal Bionematicide and its Effect on Management of Nematodes in *Solanum lycopersicum*

### First Place

**Students Name(s):** Jasmine D Bryan

**School:** Madison County High School, **Region:** Suwannee Valley

**Title:** Utilizing Eukaryotic *Saccharomyces cerevisiae* as an Electricigen in Both Pure and Co-Culture in the Anode of a Microbial Fuel Cell

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## Senior

## Physics & Astronomy

### Recognition

**Students Name(s):** Caeden Dooner

**School:** William T. Dwyer High School , **Region:** Palm Beach

**Title:** Mitigating Lunar Dust Accumulation on Spacecraft Surfaces via Electric and Magnetic Fields

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**Students Name(s):** Aliza Hasan

**School:** Lake Highland Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange

**Title:** The Impact of Basaltic and Pyroclastic Lunar Volcano Flows

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**Students Name(s):** Drew E Beattie

**School:** Hardee Senior High School, **Region:** Heartland

**Title:** Does the Angle of Incidence of Sunlight throughout the Day Affect the Efficiency of Solar Cells?

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### Honorable Mention

**Students Name(s):** Karl Reiter

**School:** Gulf Coast High School, **Region:** Collier

**Title:** Determining The Mitigative Effect Of Indium Tin Oxide (In<sub>2</sub>O<sub>3</sub>:SnO<sub>2</sub>) Raw Nanopowder on Mars Regolith Dust Electrostatic Charge, Year Two

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**Students Name(s):** Brian Scalf

**School:** Oviedo High School, **Region:** Seminole

**Title:** Impacts of Mass Distribution of Maple Samara in Flight

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### Fourth Place

**Students Name(s):** Vivek S Sandrapaty

**School:** West Port High School, **Region:** Big Springs

**Title:** A Novel Computer Simulation of a Deployable Parachute System with Aerial Detachment of the Cabin for Commercial Airplane Crashes (2nd Year Continuation Project)

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**Students Name(s):** Melanie Deville

**School:** Westminster Christian School, **Region:** South Florida

**Title:** Visualization of Three-Dimensional Aerospike Nozzle Flow Using Schlieren Photography

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**Students Name(s):** James W Egdorf

**School:** Viera High School, **Region:** Brevard: Mainland

**Title:** Newfound Electricity Source: The Epic of the Triboelectric Nanogenerators (Year 2)

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**Students Name(s):** Sarah R Belli

**School:** Sarasota High School, **Region:** Sarasota

**Title:** Optimizing the Photodegradation of High-Density Polyethylene Films Using Mechanically Engineered Strain-Enhancing Techniques

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### Third Place

**Students Name(s):** Gustavo A Toledo

**School:** Edgewood Jr/Sr High School, **Region:** Brevard: Intracoastal

**Title:** Underwater Golf: An Evaluation of the Effects of Organized Surface Irregularities on the Hydrodynamic Efficiency of Underwater Projectiles

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**Students Name(s):** Anjana Balachandar  
**School:** Buchholz High School , **Region:** Alachua  
**Title:** Pushing the Boundaries of 3D Printing of Soft Matter

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**Students Name(s):** Eric W Lee  
**School:** Stanton College Preparatory School, **Region:** Northeast Florida  
**Title:** Analyzing the Implementation of Optical Wireless Communication in Aerospace Science

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**Second Place**

**Students Name(s):** Izabelle J Young  
**School:** Bishop Kenny High School, **Region:** Northeast Florida  
**Title:** Developing a Novel System to Combat Space Radiation and Neurodegeneration Using Electromagnetism

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**First Place**

**Students Name(s):** Annika ML Vaidyanathan  
**School:** Winter Springs High School, **Region:** Seminole  
**Title:** Dynamic Contact Angle Measurements of Superhydrophobicity in Dip-Coated Face Masks to Minimize Exposure to COVID-19 Sized Nanoparticles

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**Grand Award Winner**

**Students Name(s):** Annika ML Vaidyanathan  
**School:** Winter Springs High School, **Region:** Seminole  
**Title:** Dynamic Contact Angle Measurements of Superhydrophobicity in Dip-Coated Face Masks to Minimize Exposure to COVID-19 Sized Nanoparticles

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## Senior

## Plant Sciences

### Recognition

**Students Name(s):** Ava R Kesler  
**School:** Pensacola High School, **Region:** West Panhandle  
**Title:** Effect of Combined Fertilizers on an Agricultural Crop

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**Students Name(s):** Amberly E Grace  
**School:** Lecanto High School, **Region:** Citrus  
**Title:** Ready or Not, It's Going to Get Hot!

---

**Students Name(s):** Nitishsai R Nandineni  
**School:** James S. Rickards High School, **Region:** Capital  
**Title:** The Effects of a Loam-Vermiculite Soil Compound with Different Nitrogen Concentrations on the Dry Mass and Height of *Raphanus sativus*

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### Honorable Mention

**Students Name(s):** Kelly Y Yuan  
**School:** Allen D. Nease High School, **Region:** St. Johns  
**Title:** Comparing Plant Growth in Hydroponics vs Soil

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**Students Name(s):** Etasha Shah  
**School:** Palm Beach Central High School, **Region:** Palm Beach  
**Title:** The Effect of Ultraviolet Radiation on the Amount of Lipids Extracted from *Chlorella vulgaris*

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### Fourth Place

**Students Name(s):** Connor McLoughlin  
**School:** Lakeland Christian School, **Region:** Polk  
**Title:** Cuscuta Cross-cutting: Observing the Morphological Changes in Haustorial Structure of Cuscuta Gronovii Between Hosts

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**Students Name(s):** Noah Peracciny  
**School:** Lakeland Christian School, **Region:** Polk  
**Title:** Image Analysis of Herbivory and Leaf Area of Infected and Uninfected Invasive Air Potato Leaves

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**Students Name(s):** Anay Shah  
**School:** Lake Highland Preparatory School, **Region:** Dr. Nelson Ying Expo - Orange  
**Title:** Air Pollution and Bryophyte Diversity

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**Students Name(s):** Bryce M Krohnfeldt  
**School:** Estero High School, **Region:** Thomas Alva Edison  
**Title:** Speed of Photosynthesis in Relation to Surface Area

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### Third Place

**Students Name(s):** Daniil A Fortuna  
**School:** Wiregrass Ranch High School, **Region:** Pasco  
**Title:** Effects of Curcumin and Silibinin as Telomerase Inhibitors on the Size of Agrobacteria Tumefaciens-Induced Crown Galls in *Solanum lycopersicum*

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**Students Name(s):** Faizan Zaidi

**School:** Holy Trinity Episcopal Academy , **Region:** Brevard: Mainland

**Title:** Quorum Sensing and Biofuel Production: A Solution to Clean Energy?

---

**Students Name(s):** Nicole E Stover

**School:** Samuel W. Wolfson Senior High School, **Region:** Northeast Florida

**Title:** Dissolved Oxygen Augmentation Effects on the Hydroponic Cultivation of *Eruca sativa* in NFT System

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**Second Place**

**Students Name(s):** Erin K Gaydar

**School:** Edgewood Jr/Sr High School, **Region:** Brevard: Intracoastal

**Title:** Phosphate Binders are the Solution for Elimination of Chlorophytes in the Indian River Lagoon through Chemical Absorption (Year II)

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**First Place**

**Students Name(s):** Laboni Santra

**School:** Oviedo High School, **Region:** Seminole

**Title:** Minimizing Food Waste Using a Nature-derived Coating – an Innovative Step towards Addressing Global Food Security

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**Grand Award Winner**

**Students Name(s):** Laboni Santra

**School:** Oviedo High School, **Region:** Seminole

**Title:** Minimizing Food Waste Using a Nature-derived Coating – an Innovative Step towards Addressing Global Food Security

---