

**63rd Hawaii State Science & Engineering Fair
April 10, 2020**

BEST IN CATEGORY

ANIMAL SCIENCES (ANIM)

1st Place: #103 - Jaron Kawamura / Tyler Matsuzaki, Iolani School

Title: Estrogen Pollution and the Altered Sexual Development of *Sarotherodon melanotheron* and *Oreochromis sp.* Tilapia

2nd Place: #106 – Cadie Young, Mililani High School

Title: Determining the Effective Anti-Parasitic Concentration of Noni Extract

3rd Place: #105 – Kayla Uyema, Mililani High School

Title: Ant Busters Testing Homemade Solutions to Little Fire Ants

BEHAVIORAL & SOCIAL SCIENCES (BEHA)

1st Place: #115 – Kaitlynn Weiss, Kalaheo High School

Title: How News Event Priming Affects Bias and Memory of Witnessed Events

2nd Place: #109 – Jewel Gibson, Waipahu High School

Title: Analyzing How Gender Affects Peer Conformity with Asch Solomon's Line Test of 1935

3rd Place: #110 – Annabelle Ink, Mililani High School

Title: Smoke Screen: The Effect of Social Media on Teenage Vaping

BIOCHEMISTRY (BCHM)

1st Place #117 – Madison Kai, Iolani School

Title: Adsorption and Desorption Dynamics of a Wastewater Contaminant —Ethinylestradiol— in Soils

2nd Place: #118 – Zakary Clark / Henry Schiff, Kealahou High School

Title: Debunking Synthetic Urine

3rd Place: #116 – Meilin Bucher, Mililani High School

Title: A Sustainable Natural Sunscreen

BIOMEDICAL & HEALTH SCIENCES (BMED)

1st Place: #121 – Kā'eo Kekumano, Kamehameha Schools Kāpalama

Title: Sea Cucumber Extracts of *H. cinerascens* and Cuvierian Tubules Decrease HCT-116 Colorectal Cancer Cell Viability

2nd Place: #122 – Johnathan Le, McKinley High School

Title: PCR of Hypoxia-Regulated Isoforms

3rd Place: #120 – Faith Bonacorsi, Kamehameha Schools Maui

Title: Investigating Urothelial Cell Death in a Novel Mouse Model of Prenatal Congenital Obstructive Nephropathy and Potential Therapeutics

BIOMEDICAL ENGINEERING (ENBM)

1st Place: #128 – Koryn Isa / Maleah-Rose Eusebio, Moanalua High School
Title: Cast Lining to Improve Water Resistance and Quality of Life for Injured

2nd Place: #132 – Gabriella Trujillo / Ashlyn Nakashima, Kailua High School
Title: Brace Yourself

3rd Place: #129 – Royce Ilaga / Kiana Samonte, Waipahu High School
Title: Testing an Artificial Pancreas Under Varying Glucose Concentrations Using Baking Soda and Vinegar

CELL & MOLECULAR BIOLOGY (CELL)

1st Place: #134 – Mana Harada, Roosevelt High School
Title: Targeting Genetic Mutations Using CRISPR Cas9

2nd Place: #137 – Joshua Worth, Kamehameha Schools, Maui
Title: Investigating the Roles of the Lingo1 Receptor and its Co-receptor Troy in Wound Healing in Lung Epithelial Cells

3rd Place: #136 – Cara Tan, Iolani School
Title: Analyzing Genetic Diversity of Iron-Acquiring and Iron-Regulating Genes in Nontuberculous Mycobacterial Genomes Isolated from Hawai'i

CHEMISTRY (CHEM)

1st Place: #138 – Kaia Broomell, Hilo High and Intermediate
Title: Quantification of Curcuminoids Curcumin and Bisdemethoxycurcumin in Red and Yellow Turmeric Using LC-MS

2nd Place: #141 – Jacqueline Kirkpatrick / Cade Nakao, Mililani High School
Title: The Strength of Banana Peel Bioplastics based on the Molarity of Hydrochloric Acid and Sodium Hydroxide

3rd Place: #140 – Anthony Hoang, McKinley High School
Title: Can Onions Make Bacteria Cry?

COMPUTATIONAL BIOLOGY & BIOINFORMATICS (CBIO)

1st Place: #147 – Brea Swartwood, Mililani High School
Title: Utilizing Neural Networking to Find Critical Indicators of Cognitive Impairment

2nd Place: #146 – Cindy Mo / Freddie Liang, Roosevelt High School
Title: Utilization of Artificial Intelligence Assisted Brain-Computer Interface to Allow Patients with Motor Impairments or Paralysis to Regain a Range of Mobility

3rd Place: #144 – Alexandra Hankins, Iolani School
Title: Suitability of Vibrio for the Pacific Islands with Current and Future Climate

EARTH & ENVIRONMENTAL SCIENCES (EAEV)

1st Place: #168 – Kyle Walker / Matthew Schaefer, Mililani High School

Title: Degradation of Aluminum in Saltwater and its Effect on Brine Shrimp Survival

2nd Place: #172 – Micah Willweber, Kalaheo High School

Title: Forecasting Short Term Rain Events Using Data from a Personal Weather Station (PWS)

3rd Place: #149 – Summer Aniya / Jace-Lynn Tolentino / Angelina Dulay, Mililani High School

Title: The Durability of Invasive Algae as an Alternative to Paper Production

EMBEDDED SYSTEMS (EBED)

1st Place: #176 – Lana Lubecke, Kalani High School

Title: Life READER: REmote Airborne DEtection of Respiration

2nd Place: #178 – Roen Wainscoat, Kalaheo High School

Title: Using Mesh Networking Technology to Develop a Self-Contained System for Digital Communication During Natural Disasters

3rd Place: #174 – Alex Bell / Evan Curry / Nicholas White, Kealakehe High School

Title: Developing a Multi Use UAV Capable of Long Range Flight

ENERGY: SUSTAINABLE MATERIALS AND DESIGN (EGSD)

1st Place: #184 – Ariel Ma, 'Iolani High School

Title: Harvesting Energy from Natural Evaporation through Streaming Potential to Power Water Sensors

2nd Place: #182 – Anna Grondolsky, Kamehameha Schools Kāpalama

Title: Building an Efficient Reversible Fuel Cell Stack for Use as a Backup Power Source

3rd Place: #183 – Bryce Jones, Kailua High School

Title: Designing a Thermoelectric Generator to Charge a Phone

ENGINEERING MECHANICS (ENMC)

1st Place: #198 – Tyger Yong, McKinley High School

Title: Improving Mass Transportation Using Magnetic Levitation

2nd Place: #189 – Jeyan Francis Cornelio, Waipahu High School

Title: Constructing Solar Asphalt Collectors into Waipahu Roads

3rd Place: #196 – Amanda Schiff, Kealakehe High School

Title: Optimizing the Recovery System of a Dual Deployment High Powered Rocket

ENVIRONMENTAL ENGINEERING (ENEV)

1st Place: #206 – Joshua Parker, Kamehameha Schools Kāpalama

Title: Developing and Analyzing Hydropower Generators in Fishpond Mākāhā

2nd Place: #199 – Camry Gach, Seabury Hall

Title: Power and Water Backup for Natural Disasters: Tracking Concentrated Solar Collection with a Simultaneous Cooling and Water Distillation System

3rd Place: #205 – Aaron Paned, Waipahu High School
Title: Applying Salt Water Purification to Seawalls

MATERIAL SCIENCES (MATS)

1st Place: #212 – Kelly Mukai, 'Iolani School
Title: Engineering a Taro Starch Based Bioplastic Straw

2nd Place: #210 – Regina Lee, Kalani High School
Title: Polylobate Sclereid Cells in a Nutshell

3rd Place: #211 – Katherine Liu, McKinley High School
Title: From Waste to Roads

MATHEMATICS (MATH)

1st Place: #216 – Jeein Hong, 'Iolani School
Title: A Five Phase Interpretation of a Continuum Traffic Flow Model

2nd Place: #215 – Aidan Gregerson, Kauai High School
Title: Programming an Analysis of the Effects of the El Niño-Southern Oscillation Cycle on the Development of Hurricanes and Their Translation Speed

3rd Place: #214 – Andrew Dawson, 'Iolani School
Title: Data Analytics to Compare Basketball's Most Efficient and High-Performing Lineups Among Hawai'i High Schools

MICROBIOLOGY (MCRO)

1st Place: #220 – Cade Kane, Kamehameha Schools Kāpalama
Title: Isolation and Characterization of Endophytes from Cordyline fruticosa

2nd Place: #218 – Lela DeVine, Waiakea High School
Title: Compound and Antiproliferative Analysis of FM1005: A Marine Source Derived Endophytic Fungal Strain

3rd Place: #224 – Moana Ueda, 'Iolani School
Title: The Environmental Ecology of Enterococcus found in beaches across Oahu

PHYSICS & ASTRONOMY (PHYS)

1st Place: #229 – Brock Taylor, Kealakehe High School
Title: Is a Visible Light Metallicity Model a Viable a Viable Method for Comparing a Microquasar to a Quasar

2nd Place: #225 – Luke Berrigan, King Kekaulike High School
Title: Investigating the Source of 'Oumuamua

3rd Place: #227 – Dylan Kaneshiro, 'Iolani School
Title: Analyzing the Blazhko Effect in RR-ab Lyrae Type Star XZ-Cygni

PLANT SCIENCES (PLNT)

1st Place: #239 – Katrina Kuo, Kalani High School

Title: The Effect of Thiamine on Hedera helix to Inhibit Rhizopus stolonifer Fungus

2nd Place: #236 – Kai Chun, Hilo High and Intermediate

Title: The Fumigant Effect of Garlic Essential Oils

3rd Place: #235 – Zahra Bhattacharya, Baldwin High School

Title: Can Hydroponics Save the Native Hawaiian 'Ohi'a lehua?

ROBOTICS & INTELLIGENT MACHINES (ROBO)

1st Place: #247 – Mary Winnicki, Punahou School

Title: Machine-Learning Driven Detection Of Metastatic Cancer (Year Two)

2nd Place: #245 – Alexander Meneses, Pearl City High School

Title: Stair Climber Robot

3rd Place: #246 – Minsub Song, McKinley High School

Title: Visually Aided Self Driving Robot with Reinforcement Machine Learning for Individual Support

SYSTEMS SOFTWARE (SOFT)

1st Place: #249 – Lian Fouse, McKinley High School

Title: Cyber Smart Security: Artificial Intelligence for Network Intrusion Detection Systems

2nd Place: #248 – Jasmine Cadotte, Kalaheo High School

Title: Using Artificial Intelligence to Identify Credible Information and Generate an Advanced Online Learning Tool

TRANSLATIONAL MEDICAL SCIENCES (TMED)

1st Place: #253 – Rachel Tao, Waiakea High School

Title: Investigating the Anticancer and Antioxidant Properties of Zingiber zerumbet and Piper methysticum

2nd Place: #251 – Taylor Moniz, Kamehameha Schools Kāpalama

Title: Ivermectin Induces Apoptosis, Cell Cycle Arrest, and Senescence in C4-2 Prostate Cancer Cells

3rd Place: #252 – Maya Oishi, Hilo High and Intermediate

Title: Examining the Effectiveness of Red Turmeric and Black Turmeric on Drug Resistant Neuroblastoma SKNBE2c and SHEP-1 Cancer Cells