

The 2023 Hawaii State Science & Engineering Fair Senior (SR) Division Best in Category

SR - ANIMAL SCIENCES (ANIM)		
1ST Place	Trenton L. / Maddux S. 'Iolani School	ANIM-100 Distribution of Wastewater Indicating $\delta^{15}\text{N}$ in <i>Gracilaria salicornia</i> and <i>Codium edule</i> in Kāne'ohe Bay and its Effect on Fibropapillomatosis Rates in <i>Chelonia mydas</i>
2ND Place	Alden M. Hawai'i Preparatory Academy	ANIM-101 Habitat Use Assessment of Green Sea Turtles (<i>Chelonia mydas</i>) in Puakō, Hawai'i
3RD Place	Lauryn H. Kauai High School	ANIM-102 Lure Comparison for Capturing Male <i>Culex</i> Mosquitoes

SR - BEHAVIORAL & SOCIAL SCIENCES (BEHA)		
1ST Place	Michelle C. 'Iolani School	BEHA-104 Determining Whether the Onset Age of Bilingualism Enhances Cognitive Control
2ND Place	Mackenna T. 'Iolani School	BEHA-116 Using the Practice of Art To Help Reduce Stress and Anxiety in College Preparatory Students
3RD Place	Ava D. Kamehameha Schools, Maui	BEHA-110 Parenting Characteristics vs Student Achievement

SR - BIOCHEMISTRY (BCHM)		
1ST Place	Jaxyn C. Kauai High School	BCHM-117 Creating Perfusable Tissue Scaffolds from Decellularized Plant Leaves
2ND Place	Joshua C. Kailua High School	BCHM-119 Total Biofuel Yield from Different Hawaiian Macroalgae
3RD Place	Mattis N. Kalaheo High School	BCHM-118 Neutralizing Polyethylene Microplastics

SR - BIOMEDICAL & HEALTH SCIENCES (BMED)

1ST Place	Amara M. Kamehameha Schools, Kapālama	BMED-123 Identifying and Mitigating Renal Toxicity of Lithium on Bipolar Disorder Using HEK293 Cells
2ND Place	Cheydon A. Waipahu High School	BMED-124 Investigating the Impact of Pyruvate Kinase Muscle Isoform 2 (PKM2) Knockout in Murine Cardiac Hypertrophy
3RD Place	Linda C. / Amara L. Kailua High School	BMED-125 The Effects of Caffeine on Planarian Regeneration Rates

SR - CHEMISTRY (CHEM)

1ST Place	Alanna S. Waiākea High School	CHEM-133 The Chemical Profiling and Antibacterial Evaluation of Extracts from <i>Garcinia xanthochymus</i>
2ND Place	Beatrice K. Waiākea High School	CHEM-130 Effects of Chitosan-Essential Oil Coatings on the Post-Harvest Preservation of Guava (<i>Psidium guavaja</i>)
3RD Place	Tani-Lei N. Kailua High School	CHEM-132 Measuring the Presence of Chlorophyll: The Best Solvent

SR - COMPUTATIONAL BIOLOGY & BIOINFORMATICS (CBIO)

1ST Place	Alec T. 'Iolani School	CBIO-135 Evaluating the Effectiveness of Hawaiian Stream Conservation Efforts Using eDNA
2ND Place	Kana P. Kailua High School	CBIO-134 Do Endemic Benthos Support the Ethnic Environment in a Traditional Hawaiian Fishpond
3RD Place	Cindy M. / Freddie L. McKinley High School	CBIO-136 Expressing the BDNF Gene Expression with Focus on Alzheimer's and Increasing Neuroplasticity

SR - EARTH & ENVIRONMENTAL SCIENCES (EAEV)

1ST Place	Madison M. Kamehameha Schools, Kapālama	EAEV-151 Studies on <i>Gracilaria salicornia</i> : Zinc Oxide (ZnO) Sunscreen Exposure and Use as Agricultural Fertilizer
2ND Place	Ethan A. Kamehameha Schools, Kapālama	EAEV-146 Global Fire Prevention: Developing an Effective Environmentally-Safe Fire-Extinguishing Agent
3RD Place	Rani R. Waipahu High School	EAEV-139 Comparison of Natural Renewable Sorbents in Oil Adsorption

SR - ENERGY SUSTAINABLE MATERIALS & DESIGN (EGSD)

1ST Place	Aysa J. / Kanoaomauloakai D. / Sebastian R. Kailua High School	EGSD-157 The Use of Electrohydrodynamic Thrust in Marine Propulsion Systems
2ND Place	Adrie M. Kalaheo High School	EGSD-156 Detachable Pet Door for Individual Rooms with Split AC Systems

SR - ENGINEERING TECHNOLOGY: STATISTICS AND DYNAMICS (ETSD)

1ST Place	Paul V. Waiākea High School	ETSD-163 Modification of Induction Motor Designs for Higher Efficiency and Starting Torque
2ND Place	Cassidy I. Mililani High School	ETSD-159 Biomass Powered Desalination Year III: Combustion Tuning by Closed Loop Control System
3RD Place	Michael Q. Castle High School	ETSD-160 Into the Deep-Designing, Building, Testing, and Refining an ROV for the Mesophotic Zone

SR - ENVIRONMENTAL ENGINEERING (ENEV)

1ST Place	Kenneth Y. Mililani High School	ENEV-168 Decontamination of Heavy Metals Through Phytoremediation by Native Hawaiian Plants
2ND Place	Daisy R. / Aiza M. Waipahu High School	ENEV-170 Investigating the Efficiency of a Net-Like Delivery Method with Different Concentrations of Effective Microorganisms in the Restoration of Aquatic Ecosystems
3RD Place	Adeline B. Kauai High School	ENEV-173 Solar Power Water Gravity Battery

SR - MATERIAL SCIENCES (MATS)

1ST Place	Jefferson Y. Kalani High School	MATS-178 Pressurized Annealing Of 3D Printed Components For Higher-Strength Applications and Increased Usage Viability
2ND Place	Leo J. Kahuku High & Intermediate School	MATS-179 Reducing Sound with Absorption and Diffusion

3RD Place	Arisa M. 'Iolani School	MATS-175 Creating a Bioplastic Alternative for Six Pack Soda Can Rings and Reusable Cups from Food Waste
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SR - MICROBIOLOGY (MCRO)		
1ST Place	Ellsha J. 'Iolani School	MCRO-185 Detecting Prevotella and Sneathia in Female Adolescent Vaginal Microbiomes Through 16S Sequencing and Spreading Awareness of Underrecognized Vaginal and Women's Health Issues Through a Health-Marketing Campaign
2ND Place	Minami A. Hawai'i Preparatory Academy	MCRO-189 Testing the Tetracycline Resistance Presence of Hawai'i Soil Microbiota
3RD Place	Sean R. 'Iolani School	MCRO-186 Determining the Effects of Microplastics on Vibrio vulnificus populations in the Ala Wai Canal

SR - PHYSICS & ASTRONOMY (PHYS)		
1ST Place	Ciana-Lei B. Kamehameha Schools, Hawaii	PHYS-195 Analysis of Active Galactic Nuclei Mass Across Varying Redshifts
2ND Place	Sherry J. Kealakehe High School	PHYS-199 Spatial and Formational Metallicity Variations within the Eagle Nebula
3RD Place	Neva L. Kauai High School	PHYS-201 Using Type 1A Supernovae to Determine Hubble's Constant

SR - PLANT SCIENCES (PLNT)		
1ST Place	Bryson K. Kamehameha Schools, Kapālama	PLNT-202 Antibacterial Studies on Naupaka Kahakai (<i>Scaevola taccada</i>)
2ND Place	Christian R. Kamehameha Schools, Kapālama	PLNT-203 Cytotoxicity of Māmaki (<i>Pipturus albidus</i>) on LNCaP Cells
3RD Place	Lauren G. Mililani High School	PLNT-210 The Use of Moss as a Cover Crop and Bio-filter for Excess Sodium Chloride (NaCl) in Hawaiian Coastal Farm Soil

SR - SYSTEMS SOFTWARE (SOFT)

1ST Place	Claire S. / Ralph U. Castle High School	SOFT-214 Using Artificial Intelligence to Facilitate and Enhance Personal Safety
2ND Place	Randen R. Kailua High School	SOFT-213 Designing a Digital Video Game for Education

SR - TRANSLATIONAL MEDICINE (TMED)

1ST Place	Rachel T. Waiākea High School	TMED-217 Identifying the Molecular Mechanisms of a Safer Neuroblastoma Cure Using the Native Hawaiian 'Awapuhi (Zingiber zerumbet) Herb
2ND Place	Elysia R. Kailua High School	TMED-216 Creating Comfortable Seizure Alert Devices for Children
3RD Place	Deana K. / Makana G. Kamehameha School, Maui	TMED-215 Bac-Off