

Singapore Science and Engineering Fair 2020 Awards

GOLD AWARDS		
S/N	Project ID	Project Title
1	BE008	Novel Function-Conferring Effector Domains in CRISPR-Cas13 System for Improved Specificity in RNA Editing
2	BE018	DNA Proximity Circuit - A Universal Platform for Analyzing Biomarkers
3	BM034	Cardioscopic Evaluation and Quantitative Estimation of Mitral Apparatus in Quasi-Dynamic State in Ex-Vivo Swine Model
4	BM037	Automating the Plackett-Burman design as a screen to analyse the interactions of different germinants in the the germination of C. Novyi spores
5	CH029	Synthesis of Photocatalytic Iron(III) Fumarate Metal Organic Framework Microrods for the Degradation of Organic Dyes
6	CH039	Graphene and Montmorillonite-Enabled Ultrastretchable Integrated Chemical Barriers and Fire Retardant Nanocoatings for Next-Generation Protective Clothing
7	CO009	Investigating different stress-relieving methods using Electroencephalogram (EEG)
8	CO016	Computational study of temperature dependent protein glass transition under varying solvent compositions
9	EA002	Biodegradation of Bisphenol A (BPA) by Chlorella fusca
10	EA006	Synthesis of Magnetic Carbonised Banana Peel as a Versatile and Reusable Adsorbent for Water Purification
11	EC002	Bimetallic Phosphide Nanoparticles as Efficient Sulfur Hosts for Lithium-Sulfur Batteries
12	EC003	Polymer ions conductors for multifunctional structural energy storage devices
13	EC005	Silica Nanoparticles for Oil Extraction
14	EE012	Electro-Fenton Treatment of the Polyfluorinated Pollutant GenX using Graphene Coated Nickel-Foam Cathode and Boron-doped Diamond Anode
15	EE016	Removal of Emerging Organic Contaminant by Low-cost Adsorbent
16	EP013	Conversion of Rainwater to Electricity in Singapore's High Rise Buildings
17	MA004	Connect Singapore
18	MA005	The polygon, The spiral and The mice
19	MS003	Novel Nanocomposites for Solid State Electrolytes
20	MS006	Transport and Optical Studies of Two Dimensional Electron Gas (2DEG) in AlN/SrTiO ₃ heterostructure
21	MS007	Polyelectrolyte Microcapsules Investigated by Magnetic Nanoparticles
22	MS012	Hydrogen Functionalization of Graphene using RF Plasma for Photodetection
23	MS023	Quality analysis of 2D materials with computer vision
24	MS025	Blue on blue: blue fluorescing aluminium molybdate for methylene blue sensing
25	PH032	Changing Eigenfrequencies and Sound Characteristics of Resonant Cavities Filling Up With Water
26	RO027	Automated deep learning analysis of angiography video sequences for coronary artery disease
27	RO041	Gait Recognition for Person Tracking Across Camera Network

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SILVER AWARDS		
S/N	Project ID	Project Title
1	BM006	Characterisation of a fully synthetic heparan sulphate decamer for enhancing BMP-2 stability and bioactivity
2	BM027	Genetic modifiers of alpha synuclein in a Parkinson's disease model
3	BM036	Examining the Immune Responses to Intrauterine Transplantation of Maternal and Paternal Hematopoietic Stem Cells: a more faithful model
4	EA010	Facile and One-Step Synthesis of Zirconium Oxide Nanoparticles for Removal of Phosphate and Lead(II) Ions
5	EC010	Optimising yield of lipids from common Singaporean macroalgae using varying cell disruption methods
6	EE001	The Effects of Vermicomposted Soybean Waste (okara) as Biostimulants on the Quality of Growth of Brassica Rapa Var. Parachinensis (choy sum)
7	EE011	Adsorption and Enhanced Electrochemical Adsorption for the Treatment of Pharmaceutical Wastewater
8	EE020	Optical Techniques in Determining Adsorption of Organic Pollutants by Molecular Layers on Hard Substrates from Waters of Different Salinity
9	EM007	Development of an Intelligent System for Monitoring Birds' Health in the new Mandai Bird Park
10	EP012	Osmotic power generation by pressure retarded osmosis (PRO)
11	MA037	A Sharp Trigonometric Double Inequality
12	MS009	Atomic layer deposited, mixed ceramic-photopolymer composites for solid-state electrolytes
13	MS026	Artistic Transformation of In ₂ O ₃ Nanowires via Focused Laser Painting
14	MS027	Synthesis of Hydrophobic Coatings for Building Applications
15	MS031	Beauty in the Eye of the Bee-holder: Novel Laser-induced Fluorescence in Orchid
16	MS041	Aerosol Jet Printing of Microheaters on Bandage for Localised Heat Treatment
17	RO031	Fake News Detection on Twitter: A Content Based Approach
18	SS014	Facial Recognition System
19	SS020	HoneySpider : Improving Deception Capabilities of Honeypots by Learning Web Surfing Behaviour
20	SS028	Customisable carplate recognition system for security enhancement
21	SS032	Study of radiation effects in cells using fluorescence microscopy and computational image processing techniques
22	SS035	Gamification of Organic Chemistry

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BRONZE AWARDS		
S/N	Project ID	Project Title
1	AS008	Methodologies for screening and documentation of micro-molluscs in intertidal and benthic communities around Singapore
2	BI006	Nutrient Recovery from Okara after Probiotic Fermentation using <i>Rhizopus oligosporus</i>
3	BM015	Genetic regulation of cancer candidate CD123
4	CB001	Understanding NFkB regulatory networks in monocytes
5	CB011	Identifying Sites of ADAR Activity in RNA Using cDNA Sequencing
6	CB013	Restoring DNA Repair in cells over expressing histone H1
7	CB017	MicroRNA-profiling based screening of non-small-cell lung cancer in plasma
8	CB019	Nanopore Sequencing Enables Transcriptome-Wide Profiling of RNA Modifications
9	CH017	Copper Carbene complexes for photoredox catalytic chemistry
10	CH049	Design and Synthesis of S-adenosyl-methionine amine analogues for structural studies of methyltransferases
11	CO007	Stapling of Gliadin- α 1 Peptide for the Treatment of Celiac Disease
12	CO015	Investigating the Changes in Electroencephalogram (EEG) when Listening to Competing Speakers
13	EE007	Biomimetic zeolite for the removal of metal ions and methylene blue dye from wastewater
14	EE010	Fabrication of Microbial Fuel Cells Powered by Organic Waste and Wastewater to Generate Bioelectricity
15	EM008	Automatic Recovery Systems for Autonomous Underwater Vehicles (AUVs)
16	EM030	Investigation of Flow Resistance and Air-Blast Propagation through Ventilation Pathways
17	EP003	Optical modeling and simulation of nanostructured solar cell for renewable energy
18	ES011	Soundscape Deep-Learning Driven IOT Model for Smart City Noise Monitoring
19	ES016	Development and Enhancement of a Smart White Cane
20	ES024	Design for Antenna Gain Enhancement using Low Cost Dielectric Lens for applications in 5G technology
21	ES027	Self-Tuning Magnetometer
22	MA033	Study of Heat Equations and Solutions with applications to Finance and Engineering
23	MI003	Investigating the effects of phytoextracts on protecting <i>Saccharomyces cerevisiae</i> from oxidative stress
24	MI016	Isolation and Characterization of <i>Pseudomonas Aeruginosa</i> Phages From The Environment
25	MI017	Screening and Characterisation of Novel Environmental Phages
26	MS008	Investigation of Chemical Vapour Deposited Monolayer Graphene on Bacterial and Mammalian Cell Behaviour
27	MS014	Synthesis of Long Silver Nanowires using a Facile One-Pot Polyol Method for Transparent Conductive Films
28	MS019	Achieving Low Resistance Contacts to TMDCs (Transition Metal Dihalogenides)

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BRONZE AWARDS		
S/N	Project ID	Project Title
29	MS021	Circuit Modelling of Spintronic Devices
30	MS039	Pure and Doped BiFeO ₃ Thin Film for Photodetector
31	PH031	Two-Dimensional Arrays of Magnetic Nanoparticles
32	RO015	EEG based multitasking assessment using simultaneous spatiotemporal stimulus
33	SS017	Development of Augmented Reality Navigation Application

MERIT AWARDS		
S/N	Project ID	Project Title
1	AS001	Mitigating the Threat of BPA to Animals using Vegetables
2	BM012	Evaluating the effect of HDAC7 inhibition in glioblastoma
3	BM022	The Glycan Landscape of Human Cells
4	BM023	Functional Characterization of a novel mutant of Colony Stimulating Factor 1 Receptor (CSF1R) in patient with Hereditary Diffuse Leukoencephalopathy with spheroids (HDLS)
5	CH015	Development of Zinc Sensor Based on Molecularly Imprinted Polymers
6	CO019	Automated sorting of neuronal action potentials from in vivo extra-cellular electrophysiological recordings
7	CO020	Computational Studies of Cell Durotaxis on Extracellular Matrix Rigidity Gradients as a Model for Wound Healing and Fibrosis
8	EA005	Heavy Metal Ion Adsorption using Biochar from Mango Endocarp and Mango Seed Kernel
9	EA009	Fabrication of Hydrophobic Cellulose Aerogel from Pineapple Waste for Oil Spill Clean Up
10	EC011	Effect of different types and concentrations of various substrate-biomolecules on the voltage of electricity generation in Microbial Fuel Cell (MFC) using Escherichia Coli
11	EE003	Biopurification using Plant Xylems
12	EE008	Evaluation tools for distributed small scaled plastic recycling systems
13	EE014	Validating the effect of temperature on the integrity of Layered Double Hydroxide
14	EM011	Functionalised soft robots using smart fabric components
15	EM020	Development of an Autonomous Mail and Package Delivery Vehicle
16	EM024	Design and Development of 3D Printed Functionally Graded Structures for Broadband Sound Absorption
17	EM031	Creative Solution to Overcome Detuning due to Liquid and Metal for UHF RFID
18	ES025	Wireless signal coverage modeling and optimization in visible light communication
19	ES031	Compact Spidron Antenna for UWB Applications
20	MA003	Bottle Pitches

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MERIT AWARDS		
S/N	Project ID	Project Title
21	MI008	Investigating the antibacterial and antioxidant properties of slime track and plasmodial extracts from slime mold
22	MI010	Investigating the use of phosphate removing organisms in bioremediation
23	MS032	Directional Anemometry using Magnetic Microwires
24	MS033	Quantitative Measurements in Piezo-Actuated Vibrating Sample Magnetometry
25	MS035	Investigating the Printability of Materials on a Novel Handheld 3D Printing Pen
26	PH024	Enhancing Single-photon Emission Dynamics of Nitrogen-Vacancy Centres
27	PH028	An acoustic study on the dispersive flexural modes of wave propagation in a helical spring
28	RO005	Natural Language Processing in fake news detection
29	SS001	Mixed Reality Simulations
30	SS004	AI for Semi-Automatic Grading of Online Formative Assessments
31	SS008	A Lower Bound for the Sum of the Reciprocals of Primes Derived by Information-theoretic Tools
32	SS021	Empirical Evaluation of Perimetry and Electrophysiology methods in visual field assessment
33	SS024	Investigating the dynamics of commuter overcrowding during train disruptions
34	SS029	Improving Simple and Efficient Minwise Hashing with Extra Information
35	TM008	Effects of Tumour Microenvironment on MHC Class 1 and PD-L1 Receptors on Hepatocarcinoma Cells: Relevance to Immunotherapy