

SSEF Award Winners 2017

SSEF 2017 Gold Award

Project ID	Project Title
BE003	Tissue Engineering of Muscle Constructs
BE007	Rapid and Selective Zika Diagnostics Using an Inexpensive Paper-Based Serological Flow Platform
BE017	Cell-free Biosynthesis for Biosynthetic Pathway Design
BI013	Development of a natural glycan array compatible with high sensitivity mass spectrometry analysis
CB005	An investigation into the mechanisms of pattern formation in mast cells
CB018	Succinylation of Histone H1 promotes DNA Repair
CB028	Elimination of Sequence Bias with Alternative Aptamer-Mediated DNA Detection
CB033	Twin-primer non-enzymatic DNA assembly
CH029	Recycling Phthalate Plasticisers for the Synthesis of Phthalic Anhydride
EA016	Versatile usage of spent coffee as an eco-friendly water purifier
EC021	Comparative studies on the efficacy of different additives on improving Mg, Mn-based anode material battery performance
EN011	Enhancing Performance of Forward Osmosis Membrane with Polyvinyl Alcohol
ES001	Personalised Holistic Learning Performance Assessment: A Multi-modal BCI Approach
MS004	Preparation and Characterisation of Novel Magnetorheological Fluids for Prosthetic Knee Applications
MS008	Developing polycations-functionalised silver nanoclusters for effective gene delivery
MS013	Targeted Cancer-Cell Destruction By Using Magneto-Mechanical Vibrations
MS040	Emergent Properties from WS ₂ Empowered by Laser Sculpting and Au Nanoparticles Landscaping
MS047	Electrodeposition of Thin film Mg-Fe Layered Double Hydroxide for Anionic Dye adsorption
PH002	The Physics of the Levitron
PH024	An Investigation into a system for remote object fetching on water surfaces
PH031	Magnetic Impedance Spectroscopy for Thermal Sensitive Gel
PH038	Spacetime geometries for holographic duality
PH044	Dynamical Analysis of Rolling Objects on a Horizontally Rotating Disc and its Applications
PH045	Dynamics and Linear Stability of the Coriolis-Stabilized Lagging Pendulum
SY027	Study of Variants for Impossible Differential Cryptanalysis of Block Ciphers
TM005	Generating Highly Enriched Human Cardiomyocytes for Drug Toxicity Studies
TM012	Early, Rapid and Label-free Biomarker Detection: Transforming ICU Diagnosis of Multiple Organ Failure and Acute Coagulopathy via EIS-based Electrochemical Biosensors

SSEF 2017 Silver Award

Project ID	Project Title
BE001	Antifouling Polymer Brushes Loaded with Antibiotic for Prevention of Medical Device-Associated Infections
BE014	Developing an Experimental Test Rig to Model the Mechanical Behaviour of Skin with Abdominal/Pelvic Adhesions
BE022	Development of an optical nanosensor-attached stent for the continuous monitoring of serum potassium
BI014	Investigation of the role of mammalian siderophore 2,5-DHBA in neurodegeneration
BI029	Development of Portable Sanitizing Unit using Diluted Table Salt
CB010	Optimisation of Assays for the Measurement of Antibodies and Antibody-producing Cells in Lupus-prone Mice
CB021	Characterize the function of CACNA1A G40R mutation associated with glaucoma
CB023	Development of live-cell reporter strategy to monitor Mitochondrial Morphology and its application
CH042	Comparative sun protection factors of essential oils in formulation of natural sunscreens
EA013	Removal of Atrazine using Charcoal Alginate Beads
EA025	Novel Removal of Water Contaminants using Readily Available Natural Sources
EC005	Combinatorial Investigations into Metal Oxides for Photoelectrochemical Water Splitting
EC014	LiMn ₂ O ₄ as Cathode Material for Lithium-ion Batteries
EN005	Novel and Robust High Performance Aquaporin-based Biomimetic Membranes for Water Reuse, Desalination and Energy Recovery
EN008	Cu@TiO ₂ heterostructures for photocatalytic energy generation and environmental remediation
ES013	Investigating RFID Technology for Position and Location Detection
ES015	Faldet - A Fall Detection Device for the Elderly
ES030	Doppler Direction Finder
MA016	Summation of certain infinite series
MI030	Investigating the anti-inflammatory and anti-oxidant properties of onion skin
MS006	Nanoparticle biosensors coupled with boronic acids
MS045	Tuning charge transfer property of MoS ₂ via focused laser beam based technique
MS071	Enhanced conductive concrete for antennas in buildings
PH009	A Novel Design Approach for Dual-Feed Spatial Power-Combining Reflectarray Antenna
PH032	Quantitative Analysis of Molecular Layers using Precision Ellipsometry Imaging
PH034	Spinning Cones Partially Immersed in Liquid Media
PH073	Design and Optimization of Acoustic Fresnel Lens using Metamaterials
PS022	Rapid plant health prediction using low-cost hyperspectral imaging sensors
SY026	Simplification of Road Network Models through Successive Spatial Thresholding

SSEF 2017 Bronze Award

Project ID	Project Title
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BI015	Developing Chemical Tools for the Detection of Enzymatic Activity
BI019	Novel ruthenium arene complexes with potential anti-cancer properties
BM012	Investigating novel methods to reduce cholesterol level
BM026	Identification of a Drug Target Gene in Estrogen Receptor Positive Breast Cancer and its Regulation
BM028	Immunological Profile of Paediatric Patients with Primary Nephrotic Syndrome
CB019	Effects of Phospholipid depletion on the Stability and Function of the Outer-Membrane of Gram-negative Bacteria
CH058	Thermodynamic and Electronic Properties of Graphene-Embedded Fe, Co, Ni & Pt Atoms and Dimers
CH061	Synthesis and characterization of stimuli-responsive AcrNPP-PEGDMA smart hydrogels
EA005	Investigating the use of spent chrysanthemum and its derived activated carbon in water purification
EA027	Novel use of Anthocyanins and Photoautotrophs to Create a Green Microbial Desalination Cell
EC025	Increased efficiency of MFCs through use of waste organic matter and mixed mediators
EM031	Design and Experimentation of a Plasma Armature Railgun
EM038	Inexpensive Homemade Cyclic Voltammeter using Arduino and Processing Software
EN003	Development of Optimized Methods for the analysis of Bacterial Lipopolysaccharides in Water Samples using Capillary Electrophoresis with Laser Induced Fluorescence
EN007	Inkjet Printing SERS Substrate for Pesticide Analysis
ES020	Telerehabilitation for Dysphagia Patients
ES029	Design and characterization of double-node upset tolerant latch
MA003	The Congruency of Iso-peri-area Triangle
MA043	Lightweight MDS Serial Matrices for both Encryption and Decryption
MI001	Metagenomics Profiling of Urine for the Detection of Infection
MI009	Investigating the effect of plants in removing biofilm
MS007	Promoting Hydrogen Production from Water on Earth-Abundant Metals
MS018	Smart window for Singapore - Tungsten doped VO ₂ /microgels hybrid thermochromic material and its application
MS053	Investigation of Thermal and Mechanical Properties in High-Silicon Geopolymer Foams Reinforced with Various Fillers, and their Applications
MS059	Designing Porous Hollow Poly(styrene-divinylbenzene) Spheres for 3D Cell Cultures
PH058	Fourier Spectroscopy for Laser Spectrum Measurement to Nanometer-Precision
PS004	Taxonomy and Conservation - Field Identification of Diptercarps
PS005	Somatic embryogenesis and transfer of limonene synthase gene into Chinese Mustard (Brassica juncea)
RO005	Application of Machine Learning in Automatic Sentiment Recognition from Human Speech
SY001	Car Crash Detection App

TM007	Discovery of Branched Peptide Ligand for targeting C-Reactive Protein via High-Throughput Screening: Application in predicting Cardiovascular Diseases
TM008	Patient preferences for Colorectal Cancer Treatments

SSEF 2017 Merit Award

Project ID	Project Title
BE009	Synergistic wound healing effect of polymeric hydrogel films co-delivering β -lapachone and epidermal growth factor
BI020	Development of Highly Sensitive Colourimetric Assay for Nucleic Acid Detection via Oriented Gold Nanoparticle Aggregation
BI038	Novel Use of Synthetic Peptide as BRD4 Inhibitor
BM015	Buffering Infirmary: Telomere Length and Function-Retention in Old Age
BM031	The role of HBx and its chimeric in tumorigenesis through the dysregulation of Long non-coding RNAs
CB020	The Role of Grasp65/Autophagy in unconventional secretion in rice-blast fungus <i>Magnaporthe oryzae</i>
CH003	Antimicrobial Hydrogels with Broad Spectrum of Action
CH036	Study on V and Fe doped LiVPO ₄ F as cathode materials of Lithium-ion batteries
CH051	Molten Salt Synthesised NiO as High Capacity and Long Life Anodes for Li-ion Batteries
CH056	Preparation, Characterisation and Application of Cellulosic Films
CH065	Characterization of LiMn ₂ O ₄ and LiNi _{0.5} Mn _{1.5} O ₄ cathodes for Lithium Ion Batteries
CH096	Thermodynamics of Fluorine-Induced Vacancy Defects in Graphene
C0014	A Brain-Computer-Interface to detect responses to affective pictures from Electroencephalogram (EEG)
EC013	The effect of copigmentation by ferulic acid and gallic acid on the efficiency of a blueberry anthocyanin dye sensitised solar cell at an optimum pH level
EN009	Synthesis of Cellulose Aerogel for Sorption of Oils
EN023	Effectiveness of photocatalytic degradation of SMX using WO ₃ -CnT composites
EN025	Use of plant-based materials for the absorption of lead in wastewater
EP007	Broad-spectrum and broad-angle solar collector for innovative daylighting systems
ES004	Enhanced Ant Colony Optimization in Networks
ES022	THE SMART SENSOR - KNOW YOUR MILK FRESHNESS BEFORE YOU PAY
MA009	Birthday Paradox And Their Applications To Cryptography
MA022	An Analysis of Forest Fire Spread and Fire Fighting Strategies using Cellular Automata
MA033	Temporal Evolution of Urban Transportation Networks
MI016	A Study on Bacterial Resistance to Chlorhexidine Digluconate
MS033	Novel nano crystalline anodes for Li-ion batteries
MS072	Synthesis and Characterization of Tough Hydrogel
PH010	Quantification of Dzyaloshinskii-Moriya Interaction in magnetic thin films
PH048	Modelling liquid droplets on micro-patterned surfaces
PH050	Investigating the physics of a string instrument with electromagnetic induction
RO001	Visual Detection of Vehicles and Pedestrians for Unmanned Vehicles
RO019	Application of Artificial intelligence to Bronchiectasis patient clinical data analysis

SY017	Study of Impossible Differential Attacks on Block Ciphers
TM001	Targeted next-generation sequencing for the detection of EGFR mutations in non-small cell lung cancer
TM009	Empirical Evaluation for Multi-modal Mental Fatigue Assessment
TM013	Enhanced Diagnosis of neuromuscular disorders with gene prioritization tools in Targeted Next-Generation Sequencing

SSEF 2017 Special Award

Organisation	Project ID	Project Title
Action Community for Entrepreneurship	EA002	Removal of heavy metal ions from aqueous solution using geophyte-based activated carbon as rain garden supplement
Action Community for Entrepreneurship	EA016	Versatile usage of spent coffee as an eco-friendly water purifier
Action Community for Entrepreneurship	EA027	Novel use of Anthocyanins and Photoautotrophs to Create a Green Microbial Desalination Cell
Institution of Engineers Singapore (IES)	EC010	Development of Fuel Electrocatalyst
Institution of Engineers Singapore (IES)	EC013	The effect of copigmentation by ferulic acid and gallic acid on the efficiency of a blueberry anthocyanin dye sensitised solar cell at an optimum pH level
Institution of Engineers Singapore (IES)	EM013	Investigation of the effect of the surface of the ship's hull on its drag force
Institution of Engineers Singapore (IES)	EN005	Novel and Robust High Performance Aquaporin-based Biomimetic Membranes for Water Reuse, Desalination and Energy Recovery
Institution of Engineers Singapore (IES)	EN011	Enhancing Performance of Forward Osmosis Membrane with Polyvinyl Alcohol
Institution of Engineers Singapore (IES)	EN027	Fabrication and Operation of a Novel Solar-Powered Electro-Fenton Catalyzed Reactor for Wastewater Treatment
Singapore Association for the Advancement of Science (SAAS)	BM031	The role of HBx and its chimeric in tumorigenesis through the dysregulation of Long non-coding RNAs
Singapore Association for the Advancement of Science (SAAS)	CH024	Evaluation of different storage conditions on riboflavin retention in vegetables
Singapore Association for the Advancement of Science (SAAS)	EN025	Use of plant-based materials for the absorption of lead in wastewater
Singapore Association for the Advancement of Science (SAAS)	ES022	THE SMART SENSOR - KNOW YOUR MILK FRESHNESS BEFORE YOU PAY

Singapore Association for the Advancement of Science (SAAS)	MS018	Smart window for Singapore - Tungsten doped VO ₂ /microgels hybrid thermochromic material and its application
Singapore Association for the Advancement of Science (SAAS)	PH013	Investigating the efficiency of a CNT/ABS composite as a conductive medium for a feedback system in 3D-printed prosthetic hands
Singapore Society for Microbiology and Biotechnology	MI029	Imidazolium Oligomer Gels for Antimicrobial Applications
Yale-NUS	BM012	Investigating novel methods to reduce cholesterol level
Yale-NUS	CH013	The Effect of Naturally-Occurring Plasticizers on the Tensile Strength of Thermoplastic Starch
Yale-NUS	CH029	Recycling Phthalate Plasticisers for the Synthesis of Phthalic Anhydride
Yale-NUS	CH074	Antioxidant Activity In Commercialised Teas and Milk Teas
Yale-NUS	EA027	Novel use of Anthocyanins and Photoautotrophs to Create a Green Microbial Desalination Cell
Yale-NUS	MA022	An Analysis of Forest Fire Spread and Fire Fighting Strategies using Cellular Automata
Yale-NUS	MA044	An application of matrices to solve "Bridges", a logic-based puzzle
Yale-NUS	PH034	Spinning Cones Partially Immersed in Liquid Media
Yale-NUS	PH045	Dynamics and Linear Stability of the Coriolis-Stabilized Lagging Pendulum
Yale-NUS	PS015	Effects of Nitrogenous fertilizers on the production of polyphenols in Tuscan kale

Intel ISEF 2017

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
Dominic Yap Wei Ting, Lim Hai Leong Shawn, Lim Wei Leong Bryan (Team) Hwa Chong Institution	King Abdul-Aziz & His Companions Foundation of Giftedness and Creativity Award	Project title – Versatile Usage Of Spent Coffee As An Eco-Friendly Water Purifier Category – Earth and Environmental Sciences Dominic, Shawn and Bryan carried out their project under the supervision of Mrs Sow-Peh Yoke Keow from the Hwa Chong Institution.
Clara Keng, Chow Kit Mun (Team) IP Year 6 Raffles Institution and	2nd Award in Materials Science	Project title – Preparation and Characterisation of Novel Magnetorheological Fluids for Prosthetic Knee Applications Category – Materials Science

River Valley High School		Clara and Kit Mun conducted their research under the mentorship of Mr Koh Huan Kiat from DSO National Laboratories.
Belle Sow Miaoer (Belle Su Miaoer) (Individual)	4th Award in Materials Science	Project title – Emergent Properties from WS2 Empowered by Laser Sculpting and Au Nanoparticles Landscaping Category – Material Sciences
NUS High School of Mathematics and Science		Belle did her project under the guidance of Prof Sow Chong Haur from the Physics Department, National University of Singapore.
Chan Hsi Min (Individual) IP Year 4		Project title – Rapid and Selective Zika Diagnostics Using an Inexpensive Paper-Based Serological Flow Platform Category – Embedded Systems
Raffles Girls' School (Secondary)		Hsi Min developed the diagnostic kit under the guidance of Dr Soh Jun Hui from the Institute of Bioengineering and Nanotechnology (IBN), A*STAR.
Teo York Tiang Andrea (Individual) IP Year 4	4th Award in Translational Medicine, 2nd Award by The National Aeronautics and Space Administration (NASA) & 1st Award by National Anti-Vivisection Society	Project title – Generating Highly Enriched Human Cardiomyocytes for Drug Toxicity Studies Category – Translational Medical Sciences
Raffles Girls' School (Secondary)		Andrea did her project under the supervision of Dr Lu Hong Fang from the Institute of Bioengineering and Nanotechnology (IBN), A*STAR.
Paula Nazarene Evangelista Say (Individual)	4th Award in Translational Medicine	Project title – Early, Rapid and Label-free Biomarker Detection: Transforming ICU Diagnosis of Multiple Organ Failure and Acute Coagulopathy via EIS-based Electrochemical Biosensors Category – Translational Medical Sciences
National Junior College		Paula did her work under the supervision of Dr Patthara Kongsuphol from Institute of Microelectronics (IME), A*STAR

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Project ID	Project Title
BI003	BINDING STUDIES OF MODIFIED PNAS TO MISMATCHED RNAS
BM026	AN EPIDEMIOLOGICAL STUDY OF PEDIATRIC BURNS FIRST AID MANAGEMENT BY CAREGIVERS IN SINGAPORE
BM043	THE ROLE OF HISTONE H1 IN THE DNA DAMAGE RESPONSE
BM048	DEVELOPMENT OF ELECTROCHEMICALLY-ACTIVE NANOPARTICLES FOR USE IN AN ELECTROCHEMICAL LATERAL FLOW BIOSENSOR (ELFB) FOR DENGUE DIAGNOSIS
CB029	RESOLVING AN UNDIAGNOSED CASE OF NEUROMUSCULAR DISORDER (NMD) USING PREDICTIVE MUTATIONAL PROFILING
CB036	REPROGRAMMING HUMAN FIBROBLASTS TO HEPATOCYTES WITH MICRO RNA AND SMALL MOLECULES
CH002	TIN BASED ANODES FOR LITHIUM-ION BATTERIES
CH044	PRIMARY AMINO ACID-DERIVED PHOSPHINE-CATALYSED ENANTIOSELECTIVE [3 + 3] AND [3 + 2] CYCLOADDITION OF C,N-CYCLIC AZOMETHINE IMINES WITH MORITA-BAYLIS-HILLMAN CARBONATES
CH054	PHASE SELECTIVE ORGANOGELATORS FOR OIL SPILL CLEANUP
CH062	SYNTHESIS, CHARACTERIZATION AND DNA BINDING STUDIES OF COPPER(II) PYRIDINE COMPLEXES OF 2,4- DIHYDROXYBENZALDEHYDE-N,N-DISUBSTITUTED SEMICARBAZONES
CH067	EFFECT OF GELATIN ADDITION AND BOILING TIME ON THE NANOSTRUCTURE OF MYOFIBRIL IN FISH BALL
CH076	LINKING OF PRINTABLE MOLECULES ONTO SILICON SUBSTRATES
CO003	MATHEMATICAL MODELING OF SPROUTING ANGIOGENESIS AND ITS IMPLICATIONS ON TUMOR GROWTH AND TREATMENT
EN030	DESIGNING A PHOTO-ELECTRO-CATALYTIC REACTOR WITH TRANSPARENT ELECTRODES FOR ADVANCED WASTEWATER TREATMENT
EN031	EXPLORING THE APPLICATION OF NICKEL HYDROXIDE THIN FILM IN WASTEWATER TREATMENT
ES003	UBIQUITOUS ANALYSIS OF CONTEXT USING BACKGROUND NOISE
ES008	LIGHT DIRECTION FINDER
ES016	PERSONALIZED USER'S PERFORMANCE ASSESSMENT USING ENGAGEMENT LEVEL
MA023	THE INVESTIGATION OF STEINER TREE PROBLEM IN FOUR POINTS CASE
MI021	CULTIVATION OF ENDOPHYTIC MICROBES FOR DISCOVERING BIOACTIVE COMPOUNDS
MS013	FABRICATION OF A NOVEL GRAPHENE-BASED POLY-LACTIC ACID FILM AS AN EFFECTIVE AND ENVIRONMENTALLY FRIENDLY FOOD PACKAGING
MS025	MICROLANDSCAPING OF NANOPARTICLES ON 2D TRANSITION METAL DICHALCOGENIDES FILMS FOR ENHANCED FUNCTIONALITY
MS038	HYDROTHERMAL SYNTHESIS OF HEMATITE
PH004	REALISTIC MODELLING OF THE LASER-INDUCED HEATING ON METALS

PH015	PHYSICAL ANALYSIS OF THE LIQUID FILM MOTOR
PS008	INVESTIGATING SEED-DISPERSAL MECHANISMS FOR WIND TURBINE DESIGNS THROUGH 3D PRINTING

**Results are in alphabetical order*

SSEF 2016 Silver Award

Project ID	Project Title
CH075	ELUSIVE AMINO-HYDROXYL BOND
ES014	SMART WEARABLE IN ELDERLY CARE
BM060	INVESTIGATING THE INHIBITORY POTENTIAL OF AMIODARONE, DRONEDARONE AND THEIR ACTIVE METABOLITES ON ASTEMIZOLE METABOLISM IN H9C2 CELLS
CO023	OPTICAL CHARACTER RECOGNITION THROUGH A GENERATIVE MODEL
SY020	EXERGAMING FOR LIMB COORDINATION ASSESSMENT
MS023	DEVELOPMENT OF POLYELECTROLYTE HYDROGEL SYSTEM FOR 3D CULTURE OF MYOBLASTS
CB009	INVESTIGATING THE ROLE OF ACTIN WAVES IN CELL-CELL MECHANICAL SIGNALLING
MS054	POLYMER NANOCOMPOSITES WITH TUNABLE PROPERTIES SUITABLE FOR ELECTRONIC COMPONENTS AND DEVICES
PH002	EROSION OF SOFT TISSUE USING DUAL FREQUENCY HIGH INTENSITY FOCUSED ULTRASOUND
CO020	FINDING NOVEL NON-SYNONYMOUS SNPS THAT COULD BE POTENTIALLY ASSOCIATED WITH ATOPIC DERMATITIS
EM040	USE OF FLAT REFLECTARRAY ANTENNA AS REPLACEMENT FOR PARABOLIC REFLECTOR ANTENNA
MS049	PAINT ON POWER: ENHANCED DURABILITY AND PROCESSIBILITY
EM008	DEVELOPMENT OF AN INTEGRATED MANUFACTURING SYSTEM EMPLOYING 3D PRINTING AND ASSEMBLY TECHNOLOGY
MS004	INVESTIGATION OF COLLOIDAL NANOPARTICLES USING PRECISION ELLIPSOMETRY
BM009	A RAPID AND SENSITIVE PLATFORM FOR DETECTING CARBAPENEM RESISTANCE IN THE HEALTHCARE SETTING
MS020	THE EFFECT OF TEMPERATURE ON THE ELECTROCHEMISTRY OF TITANIUM DIOXIDE NANO MATERIAL FOR LITHIUM ION BATTERIES 17 BM034 SIMPLE DETECTION OF POLYNUCLEOTIDES USING ASYMMETRIC GOLD NANOPARTICLES
BM008	INVESTIGATING THE MUTANTS OF CHIKUNGUNYA VIRUS IN IFNAR-/- MOUSE FIBROBLASTS
ES029	FALL DETECTION USING SMART WEARABLE DEVICE
MS028	SYNTHESIS AND CHARACTERISATION OF SILICON-BASED THERMAL PROTECTIVE SYNTACTIC FOAMS
CO011	CHANGES IN THE EEG DURING EMOTIONAL RESPONSE TO AUDIO-VISUAL STIMULI
BM012	INVESTIGATION OF THE NOVEL ANDROGEN-DEPENDENT TISSUE FACTOR PATHWAY INHIBITOR REGULATING PROTEIN (ADTRP) AND THE IMPACT OF ITS GENETIC VARIANTS ON COAGULATION FACTORS

EN014	ECO-FRIENDLY SYNTHESIS OF SILVER NANOPARTICLES USING SPENT COFFEE EXTRACTS FOR WATER PURIFICATION
MS063	DEVELOPMENT OF A NOVEL MECHANOCROMIC POLYMER COMPOSITE EXHIBITING OPTICAL SWITCHING UNDER AMBIENT LIGHT
MA009	MORE ABOUT DIFFERENTIAL ANALYSIS AND SUBSTITUTION NETWORK CIPHERS
CO008	IN SILICO DISCOVERY OF POTENTIAL NOVEL AND HIGH-AFFINITY PEPTIDE DEFORMYLASE INHIBITORS FOR TREATMENT OF MRSA
EM042	DROWSINESS DETECTION IN CAR ALERT SYSTEMS USING HIGH FRAME RATE VIDEOS
CH008	NANOSTRUCTURED MNCO ₂ O ₄ AS A HIGH CAPACITY ANODE MATERIAL FOR LI-ION BATTERIES
SY030	INTERFACING WITH JMOL USING OCULUS RIFT VR

**Results are in alphabetical order*

SSEF 2016 Bronze Award

Project ID	Project Title
EC012	PRODUCTION OF HIGH VALUE ADDED CHEMICALS FROM LIGNOCELLULOSIC BIOMASS
MS003	CORRELATION BETWEEN A NATURAL DIELECTRIC LENS AND A TRANSMITARRAY LENS
EN018	SYNTHESIS OF ECO-FRIENDLY CELLULOSE-BASED SUPERABSORBENT HYDROGEL FOR AGRICULTURAL PURPOSES
EA016	NOVEL USE OF PHOTOAUTOTROPHS IN MICROBIAL DESALINATION CELL FOR CLEAN WATER
CH063	INVESTIGATING THE EFFECT OF HYDROCARBON CHAIN LENGTHS IN A MERCAPTO LIGAND ON THE FLUORESCENCE OF A QUANTUM DOT
PH033	IMPACT OF PH ON THE STRUCTURAL CONFORMATION OF BOMBYX MORI SILK FIBROIN FILM
CH057	QUANTUM DOT-APTAMER BASED MICROFLUIDIC DETECTION OF THROMBIN
SY034	EARLY WARNING SIGNALS OF SUPPLY CHAIN DISRUPTIONS
CB030	FUNCTIONAL ROLES OF EPIGENETIC TARGETS IN CANCER
CO022	A FUNCTIONAL CONNECTIVITY RESTING STATE ASSESSMENT OF THE BRAIN FOLLOWING MILD TRAUMATIC BRAIN INJURY
ES004	MULTIPATH SIGNAL ANALYSIS FOR SYNTHETIC APERTURE SONAR (SAS) IMAGING
EM013	FEASIBILITY STUDIES OF 3D PRINTING OF THERMOCURABLE SILICONE
EM015	INVESTIGATING THE EFFECTIVENESS OF A SEMI-ENCLOSED SYSTEM FOR FISH FARMING IN THE STRAITS OF JOHOR
MA028	TRIANGLING A TRIANGLE
MI002	BIODEGRADATION OF PLASTICS BY BACTERIA
SY024	MODELLING THE RESILIENCE OF URBAN TRANSPORT NETWORKS
EN011	EFFECT OF ACTIVE CARBON ON ANAEROBIC CO-DIGESTION OF FOOD WASTE AND CHICKEN MANURE
EN020	SYNTHESIS OF ELECTROSPUN NYLON-6 NANOFIBROUS MEMBRANES EMBEDDED WITH AG-GO NANOCOMPOSITE

SY039	SECURING OFFICIAL CURRENCY WITH CRYPTOGRAPHY METHODS
RO002	REDUCING THE NUMBER OF PARAMETERS IN DEEP LEARNING
CH014	INVESTIGATING EFFECT OF ADDITIVES ON MILK PROTEIN FILMS FORMED AT INTERFACE & MORPHOLOGICAL STUDY OF FILMS
PH043	MAGNETISM IN TWO DIMENSIONAL STRUCTURES
RO013	CREATING A CONTEXT-AWARE SEARCH ENGINE WITH MACHINE LEARNING TECHNIQUES
CH034	MULTI-OBJECTIVE OPTIMISATION VIA SIMULATED ANNEALING
EC015	EFFICIENT PHOTOCATHODE USING EARTH ABUNDANT CUPRIC OXIDE AND GRAPHENE COMPOSITE FOR VISIBLE LIGHT DRIVEN PHOTO-ELECTROCHEMICAL WATER SPLITTING
PH003	MODELLING OF PERTURBATIONS FOR PRECISE ORBIT DETERMINATION
MS073	SYNTHESIS AND CHARACTERISATION OF PLLA-DMAEMA-PEGMA SUPRAMOLECULAR HYDROGEL AND ITS APPLICATIONS
BM044	CIRCADIAN REGULATION OF ALCOHOL ABSORPTION AND ELIMINATION
EA024	INVESTIGATION OF FRUIT PEELS AS GREEN ROOF FILTER
BM016	SUPERRESOLUTION ANALYSIS OF CORNEAL IMAGES
RO024	ADAPTIVE STRATEGIC DECISION-MAKING FOR STARCRAFT ARTIFICIAL INTELLIGENCE USING CASE-BASED REASONING
BM047	SURFACE ENHANCED RAMAN SPECTROSCOPY (SERS) BASED TEST STRIP FOR THE DIAGNOSIS OF DISEASES
CB013	A NOVEL AND HIGHLY ACCURATE SINGLE CELL MULTIPLEX PCR ASSAY FOR PREIMPLANTATION GENETIC DIAGNOSIS OF SPINAL MUSCULAR ATROPHY
PH007	OPTIMIZING OPTICAL CHIRALITY USING PLASMONIC NANOSTRUCTURES FOR BIOSENSING APPLICATIONS
MA018	DISTANCES IN GRAPHS OBTAINED BY CONNECTING CYCLES

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SSEF 2016 Merit Award

Project ID	Project Title
MS034	CREATING AN ARTIFICIAL BIOLOGICAL LEAF CAPABLE OF EVOLVING OXYGEN VIA PHOTOSYNTHESIS
CH052	LUMINESCENCE AND OTHER PROPERTIES OF COPPER(I) IODIDE-PYRIDINE POLYMERS
CH053	SYNTHESIS AND MORPHOLOGICAL STUDY OF MILK PROTEIN FILM
MS027	ENHANCEMENT OF THERMAL STABILITY IN LITHIUM-ION CELLS THROUGH THE USE OF ZIRCONIA-COATED SEPARATORS
EP011	A LOW-COST, NON-TOXIC AND ENVIRONMENTALLY-FRIENDLY APPROACH FOR ENHANCED CZTS PHOTOVOLTAIC PERFORMANCE
RO008	INVESTIGATION ON FUNCTIONAL CHILD-ROBOT INTERACTION MODALITIES
CB021	THE ROLE OF IRISIN ON SKELETAL MUSCLE
BI010	AN INVESTIGATION OF THE RELATIONSHIP BETWEEN CAFFEINATED OR DECAFFEINATED COFFEES AND THEIR ANTIOXIDANT PROPERTIES
CB008	CRISPR/CAS9-MEDIATED ASSESSMENT OF CANDIDATE MODIFIERS OF NEUROTOXICITY IN HUNTINGTON DISEASE

MS055	UTILISATION OF 1-ETHYNYLPYRERE INCORPORATED IN POLYDIMETHYLSILOXANE (PDMS) FOR SURFACE CRACK DETECTION
SY021	CUSTOMISING YOUR OWN FILE ENCRYPTION SYSTEM
MS067	DECODING THE GENETIC ROLE FOR THE FORMATION OF LUMINESCENT DNA-TEMPLATED COPPER NANOCLUSTERS
PH023	OSCILLATIONS OF BOUNCING SOAP BUBBLES
EM041	DETECTION OF SECONDARY SURVEILLANCE RADAR (SSR) SPOOFING USING SIGNAL MULTI-LATERATION
MS009	SYNTHESIS OF A NOVEL, LOW-COST CONDUCTIVE COMPOSITE NANOMATERIAL FOR 3D PRINTING OF PROSTHETIC HANDS
PH006	ROTATING MAGNETIC NANOPARTICLES
BM021	SYNTHESIS AND CHARACTERIZATION OF MAGNETIC NANOPARTICLES FOR BIOMEDICAL APPLICATIONS
CB024	NOVEL VARIANTS UNDERLYING PATHOGENESIS IN RETINOBLASTOMA
MI014	ANTIBACTERIAL EFFECT OF NANOSTRUCTURES
ES006	INVESTIGATING THE EFFICACY OF THERMAL MOTION SENSING IN AUTOMATED FALL DETECTION SYSTEMS
EM014	DESIGN OF A HYBRID AIRSHIP
CH029	STUDIES ON THE EFFECTIVENESS OF ADDITIVE MANUFACTURED BIOBALLS AS COMPARED TO CURRENT BIOBALLS IN THE MARKET
EC014	NOVEL TWO & THREE DIMENSIONAL NANOMATERIALS AS HIGH CAPACITANCE ANODES FOR LITHIUM-ION BATTERIES
MA021	A REAL VARIABLE METHOD FOR SUMMING CERTAIN INFINITE SERIES
MS074	ENERGY SMART SAVING WINDOWS
MS077	PRODUCTION OF MONODISPERSE POLYMERIC CORE-SHELL MICROCAPSULES USING MICROFLUIDICS
MS048	EFFECT OF ELECTRIC FIELD ON LASER-INDUCED ACTUATION OF CNTS
BM037	TUMOR-ASSOCIATED MACROPHAGES PROMOTE EPITHELIAL-TO-MESENCHYMAL TRANSITION IN PANCREATIC DUCTAL ADENOCARCINOMA
CB005	DEVELOPMENT OF A MATERIAL-FREE TECHNIQUE TO GENERATE 3D MUSCLE CONSTRUCTS
ES010	WEARABLE DEVICE FOR DETECTING DEPRESSION
MS022	MICROWAVE-ASSISTED SYNTHESIS OF THERMOGELLING COPOLYMERS BASED ON POLY([R]-HYDROXYBUTYRATE)
BI001	EFFECT OF DIFFERENT DISINFECTANTS ON THE TENSILE STRENGTH AND PHYSICAL EXTERNAL SURFACE OF HUMAN HAIR
SY026	AN EFFECTIVE APP TO IMPROVE WORLD HEALTH
EM003	NEW PIEZOELECTRIC ENERGY HARVESTER DESIGN WITH GREATER EFFICIENCY
MS050	TWO-DIMENSIONAL ATOM THICK MATERIALS FROM EXFOLIATION

**Results are in alphabetical order*

SSEF 2016 Special Award

Organisation	Project ID	Project Title
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Institution of Engineers Singapore (IES)	EC012	PRODUCTION OF HIGH VALUE ADDED CHEMICALS FROM LIGNOCELLULOSIC BIOMASS
Institution of Engineers Singapore (IES)	EM025	A COST EFFICIENT BRAILLE FLASHCARD DEVICE THAT HELPS NEWCOMERS WITH THE LEARNING OF BRAILLE
Institution of Engineers Singapore (IES)	EN030	DESIGNING A PHOTO-ELECTRO-CATALYTIC REACTOR WITH TRANSPARENT ELECTRODES FOR ADVANCED WASTEWATER TREATMENT
Institution of Engineers Singapore (IES)	EP011	A LOW-COST, NON-TOXIC AND ENVIRONMENTALLY-FRIENDLY APPROACH FOR ENHANCED CZTS PHOTOVOLTAIC PERFORMANCE
Singapore Society for Microbiology and Biotechnology (SSMB)	MI021	CULTIVATION OF ENDOPHYTIC MICROBES FOR DISCOVERING BIOACTIVE COMPOUNDS
Singapore Association for the Advancement of Science (SAAS)	EA003	CREATION OF A WATER BIOFILTER WITH RENEWABLE AND RECYCLABLE MATERIALS
Singapore Association for the Advancement of Science (SAAS)	EN011	EFFECT OF ACTIVE CARBON ON ANAEROBIC CO-DIGESTION OF FOOD WASTE AND CHICKEN MANURE
Singapore Association for the Advancement of Science (SAAS)	EN018	SYNTHESIS OF ECO-FRIENDLY CELLULOSE-BASED SUPERABSORBENT HYDROGEL FOR AGRICULTURAL PURPOSES
Singapore Association for the Advancement of Science (SAAS)	MS028	SYNTHESIS AND CHARACTERISATION OF SILICON-BASED THERMAL PROTECTIVE SYNTACTIC FOAMS
Singapore Association for the Advancement of Science (SAAS)	PS008	INVESTIGATING SEED-DISPERSAL MECHANISMS FOR WIND TURBINE DESIGNS THROUGH 3D PRINTING
Chapter of Clinician Scientists	BM012	INVESTIGATION OF THE NOVEL ANDROGEN-DEPENDENT TISSUE FACTOR PATHWAY INHIBITOR REGULATING PROTEIN (ADTRP) AND THE IMPACT OF ITS GENETIC VARIANTS ON COAGULATION FACTORS

Chapter of Clinician Scientists	BI001	Effect of different disinfectants on the tensile strength and physical external surface of human hair
Chapter of Clinician Scientists	CH004	Creating Household Versions of Dye Sensitized Solar Cells (DSSC)
Chapter of Clinician Scientists	CH050	Oxygen Reduction Reaction on Two-Dimensional Silicene Surface: A Density Functional Theory Study
Chapter of Clinician Scientists	CH077	Antioxidant properties and phenolic concentrations of brown, white and glutinous rice left to ferment.
Chapter of Clinician Scientists	BI005	Investigations of Effective Methods to Control Enzymatic Browning in Apples by Comparing Concentration of Oxidized Quinones
Chapter of Clinician Scientists	CO008	In Silico Discovery of Potential Novel and High-Affinity Peptide Deformylase Inhibitors for Treatment of MRSA
Chapter of Clinician Scientists	PS008	Investigating seed-dispersal mechanisms for wind turbine designs through 3D printing
Chapter of Clinician Scientists	EA003	Creation of a water biofilter with renewable and recyclable materials
Chapter of Clinician Scientists	PS006	The Suitability Of Using Leaf Galls To Assess Sea Apple (Syzygium Grande) Trees Along A Nature Trail And An Urban Road

SSEF 2016 Junior Scientist Category

Name	Project ID	Project Title	Award
Chan Hsi-Min	JR06	A BIOCOMPATIBLE, ANTI-FOULING ZWITTER-IONIC HYDROGEL FOR BIOMEDICAL APPLICATIONS	BROADCOM MASTERS INTERNATIONAL
Nadine Wang Rei Ying	JR01	THE STUDY ON ATMOSPHERIC PRESSURE AT LOW ALTITUDE USING MICROCONTROLLER WITH MOISTURE SENSITIVE SENSOR	COMMENDATION

Intel ISEF 2016 Delegates

Project ID	Project Title	Type of Project	Name	School
EN030	DESIGNING A PHOTO-ELECTRO-CATALYTIC REACTOR WITH TRANSPARENT ELECTRODES FOR ADVANCED WASTEWATER TREATMENT	TEAM	Huang Weiqi Victor Foong Yan Kai, Brandon	NUS HIGH SCHOOL OF MATHEMATICS & SCIENCE

MS038	HYDROTHERMAL SYNTHESIS OF HEMATITE	TEAM	Clara Keng Hui Lin Chow Kit Mun	RAFFLES GIRLS' SCHOOL RIVER VALLEY HIGH SCHOOL
BM048	DEVELOPMENT OF ELECTROCHEMICALLY-ACTIVE NANOPARTICLES FOR USE IN AN ELECTROCHEMICAL LATERAL FLOW BIOSENSOR (ELFB) FOR DENGUE DIAGNOSIS	INDIV	Sim Yu Ki	NATIONAL JUNIOR COLLEGE
CH076	LINKING OF PRINTABLE MOLECULES ONTO SILICON SUBSTRATE	INDIV	Jia Shu Yi	NATIONAL JUNIOR COLLEGE
EN031	EXPLORING THE APPLICATION OF NICKEL HYDROXIDE THIN FILM IN WASTEWATER TREATMENT	INDIV	Wang Yuhang	NATIONAL JUNIOR COLLEGE
ES008	LIGHT DIRECTION FINDER	INDIV	Samuel Leong Chee Weng	HWA CHONG INSTITUTION

Intel ISEF 2016

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
Samuel Leong (Individual) IP Year 6 Hwa Chong Institution		<p>Project title – Optically-illuminated Directional Sensing for Guidance and Alignment Systems</p> <p>Category – Embedded Systems</p> <p>A low cost, low power, highly versatile circuit that is able to lock on to a specific laser frequency has been designed and built. This compact and responsive laser guided system which is free from all external light interferences, has potential applications in security, defence, elderly care and smart robotic systems. Samuel has developed his system under the guidance of Dr Wee Keng Hoong and Mr Lee Jin Yu from the DSO National Laboratories.</p>
Sim Yu Ki (Individual) IP Year 6 National Junior College	Honorable Mention for 2016 USAID Global Development Innovation	<p>Project title – Early, Affordable and Rapid Viral Detection: Revolutionizing Home Diagnosis of Dengue and Zika through Lateral Flow Biosensing</p> <p>Category – Biomedical Engineering: Biomedical Devices</p> <p>Capacity to mitigate outbreaks and manage patient care for debilitating mosquito-borne flaviviral diseases hinges critically on early, rapid and accurate diagnosis. In this work, nanoparticles to be embedded on lateral flow biosensors were developed, potentially revolutionizing current flaviviral diagnostic methods by enabling precise, prompt and cost-effective diagnosis. Yu Ki did</p>

her project under the guidance of Dr Paul Free Francis from the Institute of Materials Research and Engineering (IMRE), A*STAR.

Wang Yuhang
(Individual)
IP Year 6
National Junior College

Third Award in the category of Chemistry, Special Award for King Abdul-Aziz & His Companions Foundation for Giftedness and Creativity (MAWHIBA), a special prize in the field of Water Technology at Intel ISEF 2016

Project title – Nickel Oxy-hydroxide Thin Film as Efficient Electrocatalysts for Dye Wastewater Treatment
Category – Chemistry: Materials Chemistry
The novel application of nickel oxy-hydroxide thin-films proves critical as an energy-efficient, maintenance-free and cost-effective treatment and management of industrial dye wastewater. Yuhang did his project under the supervision of Dr Ren Yi from the Institute of Materials Research and Engineering (IMRE), A*STAR.

Jia Shu Yi (Individual)
IP Year 6
National Junior College

Fourth Award in the category of Chemistry

Project title – Immobilization of Glycans on Silicon Substrates for Diagnostic Microarrays
Category – Chemistry: Analytical Chemistry
Three different methods of immobilization of glycans onto silicon substrates were developed. This allowed Precision Ellipsometry (PREL), a sensitive, simple, yet inexpensive instrument for the analysis of glycan microarrays as well as diagnosis of common diseases. Shu Yi did his work under the supervision of Dr Nikolai Yakovlev from Institute of Materials and Research and Engineering (IMRE), A*STAR.

Clara Keng,
Chow Kit Mun (Team)
IP Year 5
Raffles Institution and
River Valley High
School

Project title – Tailored Synthesis for Morphology Control of Hematite Nanoparticles
Category – Materials Science: Nanomaterials
Through tailored hydrothermal synthesis, hematite nanoparticles with high coercivity to size ratios were obtained. These nanoparticles particles are poised as a prime candidate as cheap, efficient and reliable data storage materials. Clara and Kit Mun conducted their research under the mentorship of Mr Koh Huan Kiat and Ms Deborah Ho from DSO National Laboratories.

Brandon Foong,
Victor Huang (Team)
Year 6
NUS High School of
Mathematics and
Science

Project title – A novel reactor with a transparent electrode to improve UV-mediated electrochemical wastewater treatment
Category – Environmental Engineering
The project aims to design a cost-effective and eco-friendly electrochemical reactor to treat industrial wastewater contaminated with organic toxic compounds. The reactor takes advantage of sunlight

through the use of transparent electrodes and specific reactor geometry to quickly degrade organic toxic compounds. Brandon and Victor carried out their project under the supervision of Dr Olivier Lefebvre from the Department of Civil and Environmental Engineering in NUS.

SSEF Award Winners 2015

SSEF 2015 Gold Award

Project ID	Project Title
BI012	Low Concentration Acidic Electrolysed Water Combined With Mild Heat Treatment For Sanitising Fresh Organic Broccoli
CH007	Multifunctional Phosphorescent Conjugated Nanoparticles for Reactive Oxygen Species Generation and Imaging Applications
CH008	Utilising metal-free click chemistry for development of peptide-based biomaterials
CH059	ELECTROCHEMICAL STUDIES OF 'THERMALLY EXFOLIATED GRAPHENE OXIDE-CARBON' COMPOSITE IN VARYING RATIOS AS POTENTIAL ANODE MATERIAL FOR BATTERIES
CS012	Development of haze removal algorithm for image
CS048	Prediction of NBA Stars from NCAA Prospects using Machine Learning Techniques
EE014	Investigation of Lift Force Generation of Insect-Inspired Flapping Wing Micro Air Vehicle
EE052	Wearable LED Illumination for Skin Treatment
EN042	Colourful Few-layer Black Phosphorus Microstructures Fabricated via Focused Laser Beam
EN061	Green Synthesis of Luminescent Noble Metal Nanoclusters for Biological Applications
EV004	Synthesis of Electrospun Nanosilver-Functionalized Nylon 6 Nanofibres for Membrane Water Purification
EV031	Cost-effective water purifying technology employing plant parts as purifying agents
MA044	Investigating the use of matrices to obtain solutions to variations of the game of "Lights Out"
MA051	Equity Portfolios: Essentials of a winning portfolio
MI022	Optimisation of amine-based antimicrobial cationic polymers: a structure-property investigation
MI032	Detection of microbial pathogens in swimming pool backwash
PH006	Hologram
PH007	Bubble Crystal
PH010	Study of the motion of loaded hoops
PH011	Physical analysis of the rotating saddle trap — the mechanical analogue of the quadrupole ion trap

*Results are in alphabetical order

SSEF 2015 Silver Award

Project ID	Project Title
BI015	An Investigation of dipyrindine-1,3,4-triazol-4-amine and its Copper (II) Complex as Anticancer Drugs
CB010	Localization of Giantin mRNA and Protein on Spindle Fibers
CH004	Alpha-Particle Induced Helium Wetting of Stepped Copper-Niobium Interfaces
CH012	Binding of glycans to SiO ₂ using amine anchors

CS036	A data-driven approach for Automatic Question Generation from Texts
CS037	Tone Recognition in Whispered Mandarin
CS055	The effects of allophones on singing technique and their implications towards spectral modelling on the human singing voice
EE039	Wireless Sensory-Feedback Headband for Personalized Relaxation Management
EE057	Evaluation of the Pining Effect at the Metal/Organic and Organic/Organic Interface and its effect on the Power Conversion Efficiency on Organic Solar Cell
EN007	Synthesis and Characterisation of Polyurea Varying Hard-Soft Segment Ratio for High Strain-Rate Application
EN013	Electrochemical Properties of MnO ₂ for Li-ion Batteries
EN033	Fluid Mechanics of the Carotid Siphon Artery with regards to the Moyamoya disease
EN051	MoS ₂ -CNT Hybrid
EN062	Blood Flow Index portraying Cold-induced Vasodilation via Diffuse Speckle Contrast Analysis in Raynaud's Disease
EV009	Sustainability in Potable Water Production through Photocatalytic Decontamination of Ground Water
MA001	Parrondo's Paradox and Its Relevance in Describing the Phenomenon of Stochastic Resonance
MA016	Life-cycle of cryptocurrencies
MA027	Generalisation of bishop polynomial derived from conventional rook polynomial
MA035	Skewness and Crossing Number of Graphs
ME003	Sleep Quality Monitoring and Assessment using Multimodal Sensors
ME030	The role of IAK1 in causing chemoresistance in Triple Negative Breast Cancer
ME043	Investigation of Androgen-Dependent Tissue Factor Pathway Inhibitor Regulating Protein (ADTRP) and its role in the regulation of haemostatic factors, in relation to Coronary Artery Disease
ME045	Identifying potential antiviral compounds against CHIKV
PH009	Study of the key physical aspects and synchronization applications of the Chua's circuit
PH013	Study of a Potential Magnetic Braking System

**Results are in alphabetical order*

SSEF 2015 Bronze Award

Project ID	Project Title
BI022	Development of Edible Antimicrobial Coating based on Fish Gelatin to extend the Shelf Life of Fish Fillet
BI023	Structural basis for the allosteric inhibition of human kidney-type glutaminase (KGA) to arrest cancer cell metabolism
CB002	The identification of factors that maintain haploid embryonic stem (haES) cell state.
CB003	Effects of Titanium dioxide Nanoparticles on Differentiated H9c2 Rat Cardiomyocytes
CB007	Efficient cardiac differentiation of patient-specific induced pluripotent stem cells under defined culture conditions
CB026	Study of Cytokine release from Macrophages and Myeloid Dendritic Cells in response to Lipopolysaccharide stimulation

CB040	Systematic Analysis of mRNA and miRNA expression data from MSC data sets in literature
CB049	Mass cytometry analysis of immune cells heterogeneity
CH016	Effect of Preparation Methods on Properties of Nickel Oxide as an Anode Material for Lithium Ion Batteries
CH066	Click Reactions and Application in New Molecular Materials
CS004	A simulation study of hydrophobin assembly in water and its implications for film formation at the air-water interface
CS007	ADynamic Analysis on Andriod thorough Java API Method Hooking
CS008	A Monospace Approximation to the Dual-Space Method for Analogy Questions
CS026	Predicting Basketball Team Performance Using Historical Data
EE012	Cost Effective Design for 3D Printed Shockproof Mobile Phone Case
EE015	Numerical Study of Indirect Evaporative Cooler
EM007	The Use of Durian Waste in Multi-purpose Filter for Water Purification
EN003	Investigation and fabrication of superhydrophobic surfaces
EN005	Hand-In-Hand: Dual Robotic Hand Passive Movement with Brain Computer Interface (BCI)
EN034	Development of a Novel Interface Layer for the Toughness Enhancement of Ceramic Composites
EN045	Synthesis of Lignin-HEMA Copolymer for Contact Lens Applications
EN070	Investigating the luminescent mechanochromic properties of elastomers
EV015	The effects of various external factors on the efficacy and effectiveness of SODIS water treatment. Alternative water treatments are also studied.
EV027	Development of an Internet Cloud-Linked Air Quality Monitoring System
MA043	Partitions Galore
MA067	Tactics to 3D Minesweeper
ME002	Identifying Mutations in Dystrophinopathic Patients that are Applicable as Novel Targets for Antisense-Mediated Exon Skipping Therapy
ME005	Paracetamol can affect the timing of embryo development
ME008	Overexpression of RASAL2 Drives the Invasion and Metastasis of Triple-Negative Breast Cancer (TNBC)
ME032	RFWD3 is upregulated in Breast Cancer and associates with Breast Cancer Cell survival
ME051	Detection of resting state connectivity using functional magnetic resonance imaging
PH033	Bubble bahaviour, light intensity, spectrum of light of single bubble sonoluminescence in glycerin
PH051	Molten salt synthesis of Mg, Cu doped Fe ₂ O ₃ as suitable anode materials for Li-ion batteries

**Results are in alphabetical order*

SSEF 2015 Merit Award

Project ID	Project Title
AS003	Role of septal GABAergic mechanisms in modulating indices of nociceptive processing in the formalin model of persistent pain

AS012	The Colour of Song: Sound Symbolism in Singapore's Languages
BI011	Discovering Anticancer Drugs
BI019	Elucidation of the role of FAT10 in carcinogenesis
CB012	Expression of Trophic Factors and Cytokines in Activated Microglia
CH020	Towards the Synthesis of Ruthenium(II) Structural Analogues of the [Fe]-Hydrogenase
CH044	Vacuum Impregnation On Physicochemical And Nanostructure Of Fresh Strawberries
CH057	Investigation of Different Conjugate Systems for Organic Solar Cells
CH060	Electrochemical Studies of 'Exfoliated Graphene Oxide-MoO ₂ ' Composite Synthesized by Novel Graphenothermal Reduction
CS018	Agent-Based Simulations of Localised Attractions in Shopping Malls
CS029	Wearable Air Quality Sensors Integration with iOS devices
CS035	Use of wireless motion technology for military training
CS054	Evaluation of Machine Learning-based Modelling Techniques for Multivariate Systems
CS063	Accurate Retrieval Of Song Titles By Automatic Speech
EE010	Vibration analysis for multiple fault diagnosis in induction motors
EE028	Decoding Arm and Wrist Movements using a Piezoresistive Sensor Array and Artificial Neural Networks
EE035	Design and Analysing Micro-combustors for Greater Efficiency
EN006	Relation Between Molecular Structure and Molecular Interaction Studied during Crystallisation
EN027	Fabrication of a hierarchical porous scaffold for tissue engineering
EN039	Effects of molten salt method of preparation on the electrochemical properties of SnO ₂
EN063	Molten salt method of preparation and optimization of Anatase and Rutile TiO ₂ phases
EN079	Investigation of the effect of solvents with varying pH on spider silk mechanical properties
ET010	Development of Copper Oxide Graphene Composite and Low Cost Transparent Electrode for Solar Energy Harvesting
EV024	Detection and Separation of Bacteria in Water using Microfluidics Chip
MA018	Equity Portfolios: Factor Modeling and Efficiency
ME009	Investigating microbial antagonism and removal of cholesterol by probiotics
ME017	Adding simvastatin to conventional chemotherapy to improve cell kill in breast cancer cells
ME040	Spinal muscular atrophy: Identifying rare mutations in patients and detecting gene copy number carriers through a novel droplet digital PCR approach
ME048	LGMD2I patient misdiagnosed with DMD: FKRP gene screening should be considered in diagnosis of patients with Duchenne/Becker-like phenotypes
MI003	Biotransformation of okara by microorganisms for the production of valuable carotenoids by Rhodosporidium Toruloides
MI007	Polymicrobial Biofilm Dynamics during Catheter-associated Urinary Tract Infections
MI023	Development of a Multiplex TaqMan Real-time RT-PCR Assay to differentiate all known Ebolavirus Strains
MI029	Environmental Impact studies of Kranji Mangroves
PH025	Coanda Saucer: Alternative Flight Dynamics
PH044	Colorimetric Studies of Molecular Interaction
PS014	Exploiting The Photo-Protection Capabilities Of Anthocyanin For Human Use

**Results are in alphabetical order*

SSEF Special Award

Project ID	Project Title
CS007	Dynamic Analysis on Android through Java API Method Hooking
CH057	Investigation of Different Conjugate Systems for Organic Solar Cells

Broadcom MASTERS International Delegate

Project ID	Project Title
CH062	Red Cabbage Juice as pH Indicator

Intel ISEF 2015

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
<p>Lee Shi Ya Claudia (Individual) IP Year 6 Raffles Institution</p>	<p>4th Award in category of Chemistry</p>	<p>Project title – Metal-free “click” chemistry for the development of peptide-based biomaterials Category – Chemistry: Organic Chemistry</p> <p>Metal-free “click” chemistry was used as a novel way to develop the hydrogels that were sensitive to the human body temperature. These hydrogels could be used for drug delivery that will greatly enhance the patient experience and reduce discomfort. Claudia did her project under the supervision of Dr Michael Reithofer and Dr Charlotte Hauser from the Institute of Bioengineering and Nanotechnology (IBN), A*STAR.</p>
<p>Tommy Ong Zhi Xian (Individual) IP Year 6 Raffles Institution</p>		<p>Project title – Development and Optimization of Novel Amine-based Antimicrobial Cationic Polymers Category – Microbiology: Antimicrobials and Antibiotics</p> <p>The project seeks to develop low-cost cationic polymers that have antimicrobial properties. These polymers can be used as coatings on surfaces in hospitals and have the potential in applications that combat drug-resistant bacteria. Tommy conducted his research under the mentorship of Dr Majad Khan from the Institute of Bioengineering and Nanotechnology (IBN), A*STAR.</p>
<p>Joel Tan Shi Quan (Individual) Year 6 NUS High School of Mathematics and Science</p>		<p>Project title – Physical analysis of the rotating saddle trap – the mechanical analogue of the quadrupole ion trap Category – Physics and Astronomy: Mechanics,</p> <p>The project investigated the predictive power and limitations of the rotating saddle trap as an analogy of the quadrupole ion trap that had applications in mass spectrometry. Joel did his research under the supervision of Dr Yeo Ye from the Department of Physics, National University of Singapore (NUS).</p>

<p>Ching Yi Jie Preston (individual) IP Year 6 National Junior College</p>	<p>Project title – Ultrafast and Green Design of Luminescent Nanoclusters for Photodynamic Therapy Category – Biomedical and Health Sciences: Disease Treatment</p>
<p>Benjamin Tan Kye Jyn, Lim Zheng Theng, Tan Yi Zhao (Team) IP Year 5 Hwa Chong Institution</p>	<p>2nd Award in category and Second Life Science Award by Sigma Xi</p> <p>Project title – Synthesis of Electrospun Nanosilver-Functionalized Nylon 6 Nanofibres for Membrane Water Purification Category – Environmental Engineering: Water Resources Management</p> <p>The team found a novel way of embedding silver nanoparticles that had anti-bacterial properties in membranes that were used in desalination and water reclamation plants. Their membranes make the water purification process more affordable and efficient, potentially leading to immense cost savings for the water industry. The team conducted their research under the supervision of their school teacher, Mrs Sow Yoke Keow from Hwa Chong Institution.</p>
<p>Madhumitha Shridharan, Ren Yuhua (Team) Year 6 NUS High School of Mathematics and Science</p>	<p>Special Award given by China Association for Science and Technology</p> <p>Project title – Wearable LED Illumination for Skin Sensitivity Calibration Category – Computational Biology and Bioinformatics: Biomedical Engineering</p> <p>The team developed a method that significantly reduced energy consumption and improved patient comfort to administer a patch test for patients with skin problems. This could potentially lead to substantial cost savings in hospitals by freeing up treatment rooms for other purposes. They were mentored by Professor Chua Soo Jin from the Department of Electrical and Computer Engineering, National University of Singapore (NUS).</p>

SSEF Award Winners 2014

SSEF 2014 Gold Award

Project ID	Project Title
BC010	Identification of secretory proteins in breast cancer using mass spectrometry-based proteomics
CH042	Ni _{1-x} Zn _x Fe ₂ O ₄ spinel oxides as high performance anode materials for Li-ion batteries
CM036	Screening for genetic polymorphisms in human GRIN2B gene and correlating to patients diagnosed with bipolar disorders
EB023	Characterization and Engineering of Sucker Ring Teeth Polymer Proteins
EB068	Synthesis and characterization of Nano-ZnCo ₂ O ₄ as a high capacity anode for Lithium Ion Batteries
EB072	Synthesis and analysis of ionic liquid
EB094	Synthesis of polymer-chitosan to remove heavy metal ions from water
EE041	Give a Hand: Designing and Developing a Neuroprosthetic Hand
EE048	Solid State Fan
EE053	Development of a Fast, Temperature-controlled UV Reactor
ET008	Nature Derived Nanostructured Carbon Materials for Energy Storage
ET014	Design and analysis of thin-film thermoelectric devices for use in waste heat recovery
MB007	Improved multiplexed automated genome engineering through directed evolution
MH033	Epstein-Barr virus BART microRNAs target Dicer and Ago2 to cause inhibition of NK microRNA function in NK/T-cell lymphoma
MS004	Algorithmic solution to Happy Ending Problem via Graph-to-matrix transformation with its implication on intersection minimization
MS014	A Hypothesis on How the Ancient Egyptians Move the Limestone Blocks Used to Build The Great Pyramid of Giza
MS016	Optimal Strategy for Completing Game of Snake
VM011	Synthesis of Biodiesel from Soybean Waste
VS009	Exploitation of biowaste for water treatment

**Results are in alphabetical order*

SSEF 2014 Silver Award

Project ID	Project Title
CH001	Designed Assembly of MOFs through Molecular Sewing of Pre-formed 2D Layers
CH019	Removal of Lead and Cadmium from Aqueous Solutions Using Used Papers
CM048	The Role of AMP-activated Protein Kinase in the DNA Damage Response
EB015	Graphene Based Aerogel for Metal-Air Batteries
EB024	The redox chemistry of iron haemoglobin using micro magnetic resonance relaxometry
EB031	Laser induced actuation in shape memory alloy
EB040	Effect of Impact Angle on the Energy Absorption of Aluminum Honeycomb
EE045	Binaural Navigation
ET004	The Importance of Interface Engineering in Organic Bulk Heterojunction Solar Cells

MB010	Modulation of Quorum Sensing in <i>Pseudomonas aeruginosa</i>
MB020	Engineering Phage Sensitivity in Bacteria through Receptor Cloning
MH004	Development of Biomimetic Skins
MH017	Novel approach to screening mutations causing retinoblastoma, a childhood cancer of the retina
MH044	How the Tumour Suppressor Fumarase aids in the Repair of Damaged DNA
MS025	Mathematical modeling, simulation and computational predictions of the natural killers and tumor cells interaction
MS026	Skewness of some generalized Petersen Graphs
MS055	Investigation of Fermat point on a sphere with its application on solving optimal location problem
PA014	An investigation into the interaction and resulting shapes of a thin liquid jet impacting a soap film, and either penetrating through it or merging with it

**Results are in alphabetical order*

SSEF 2014 Bronze Award

Project ID	Project Title
BC006	Evolution of the Arp2/3 complex involved in regulation of the actin cytoskeleton
CM021	Three Dimensional Visualization of Cerebellar Compartments via Brain Clearing Techniques
CM027	Characterising c-Met Antibodies For Cancer Therapy
CM034	Synthesis of biocellulose using acetobacter xylinum and recycled sugar substrates
CS015	iB.E.S.T.: Intelligent Balance Evaluation and Stability Training using Smartphones
CS023	Practical Application and Construction of Fountain Codes for Military Scenarios
CS025	Visualization and Sentiment Analysis of Twitter Data
CS032	Analysis of land cover changes over time with XSAT imagery in GNU Octave
EB017	Bifunctional perovskite catalysts for oxygen reduction and evolution reactions and their application in metal-air batteries
EB020	MoS ₂ -CNTs Hybrid as Photo Detector
EB026	Motion analysis of lower extremity during ascending and descending in high heel slippers
EB034	Materials for Spray-on Energy
EB041	Hybrid Cu(II) Materials for Catalytic Applications
EB052	Development of Ceramic Microspheres by Sol-gel Process
EE015	Conceptualization and Implementation of a Generic Pseudo-Random Number Generator for FPGA with Applications in Cryptography
MB006	Investigating the suitability of modified nanofibers as antimicrobial and biodegradable surgical sutures
MH007	Structural determinants of activity of a compound against multiple cancer cell lines
MH034	Thyroid Hormone regulated Autophagy in Skeletal Muscle in <i>Mus Musculus</i>
MH042	Effect of UV rays on properties of human hair (tensile strength and physical external surface of hair)
MS020	Tromino Tiling
MS038	Iterations of Duals of Polygons
MS059	Encryption using the roots of polynomials
PA009	Physics of Badminton

PA015	Investigation on the dynamics and apparent interactions of massive balls rolling on a stretched horizontal membrane as a model to illustrate gravitation
PA020	On the rebound, subsequent motion and fluid dynamics of a small fluid-filled sphere undergoing a vertical impact
PA023	A Statistical Analysis of Galactic Dark Matter Distributions Through Rotation Curves
PA028	Sorting of C.elegans with microfluidic chip with integrated optics
PA035	Colorimetric Study of Molecular Interactions
PS015	Inhibitory potential of flavonoids from Carica papaya seeds, on the growth rate and mitotic index of Allium Cepa and Carica papaya roots
VM004	Zooxanthellae in Singapore's Corals
VM005	Impact of alginate-encapsulated quorum quenchers on membrane biofouling

**Results are in alphabetical order*

SSEF 2014 Merit Award

Project ID	Project Title
BC003	Model Membrane Interaction and DNA-Binding Studies of Antimicrobial Peptides
BC007	Discovery of Small Molecule Inhibitors of Human Vaccinia-Related Kinase 1 (VRK1)
BC009	Creation of Novel Microsphere and Nanoemulsion Delivery Method for Finasteride
BC018	Eumelanin and Pheomelanin and their Comparative Effectiveness in Melanoma Prevention
CH003	Investigation of polyelectrolyte binding using precision ellipsometry
CH023	Investigation of the use of molecular dynamics to improve small ligands binding pose prediction
CH057	Detection of Unintended Amino Acid Sequence Changes in Recombinant Monoclonal Antibodies Due To Methotrexate Selection Using Mass Spectrometry Peptide Mapping Method
CH059	Investigation of Protein Binding using Precision Ellipsometry
CH066	The use of human hair as a bio-sorbent for aqua cations using copper (II) ions as a model
CM003	OLIVER: Identification of Suitable Reference Genes from Transcriptome Datasets
CM022	To investigate the effect of Rehmannia Six Formula on the gene expression of aquaporin-2 in Drosophila Melanogaster S2 cells
CM023	Regulation of FNDC5/Irisin by Myostatin
CM025	Predicting the effect of gene mutations in children with genetic disorders
CM030	Human Hereditary Predisposition to Pseudo Exfoliation Syndrome
CS001	Investigating voice activity detection algorithms in whispered speech
CS009	Identification of Breast Cancer Biomarkers and Their Networks Based on Genome-Wide Data Analysis
CS031	Found in Translation
CS047	Study into VoIP Applications
EB003	Investigation on Metal and Metal Oxides Thin Film as Potential Low Emission Glass Coating for Window Application
EB011	Preparation and Electrochemical Studies on VSbI4
EB013	Biomimetic membrane on water purification
EB032	Carbon Nanomaterials for Energy Storage

EB055	Electrochemical Lateral Flow Biosensor For Detection Of Pathogens And Toxins In Water
EB066	Investigating the Efficacy of Minimalist running shoes in improving gait coordination
EE007	Earthquake Engineering: Investigating the impact of the length of a pendulum tuned mass damper on its damping effect on a building
EE037	Study on Metal Penetration in Silicon and its Effects on the Schottky Diode Properties
EE050	Colorimetry for Purpose of Disease Detection
MH001	Differential diagnosis of overlapping childhood human dystrophinopathies and related disorders: The development of a novel targeted, panel for mutation screening through a tiered approach
MH008	PID1 induces insulin resistance by increasing Fetuin-1 secretion
MS063	Integer Factorisation
PA027	Super capacitor application of MnO ₂ nanotubes/Graphene oxide mixture
PA036	S-DNA is a binding substrate for B-DNA ligands
VS001	Exploring vermicompost applications for waste management
VS026	2-in-1 recyclable use of spent Bentonite to treat volatile organic compounds in industrial wastewater

**Results are in alphabetical order*

SSEF Special Award

Project ID	Project Title
CH001	Designed Assembly of MOFs through Molecular Sewing of Pre-formed 2D Layers
CH019	Removal of Lead and Cadmium from Aqueous Solutions Using Used Papers
MH004	Development of Biomimetic Skins
EE007	Earthquake Engineering: Investigating the impact of the length of a pendulum tuned mass damper on its damping effect on a building

Broadcom MASTERS International Delegate

Project ID	Project Title
EB013	Biomimetic membrane on water purification

Intel ISEF 2014

Details of Projects Submitted By The Singapore Team

Students	Award
Shannon Lee Xinjing National Junior College	Grand Award Intel Foundation Young Scientist Award - US\$50,000 Intel Best of Category Award (Energy & Transportation) – US\$5,000 First Award (Energy & Transportation) – US\$3,000
Mark Lim Kit Raffles Institution	Grand Award Third Award (Microbiology) – US\$1,000 Special Award Fourth Award (American Society for Microbiology) - US\$750

Vanessa Tan Yun Han
Dunman High School

Grand Award

Fourth Award (Engineering: Materials & Bioengineering) – US\$500

Lim Ee Chuan, Eliot
Ou Yang Zhong Liang
Yu Shiyang
NUS High School of
Mathematics & Science

Grand Award

Fourth Award (Engineering: Electrical & Mechanical) – US\$500

Special Award

Second Award (American Intellectual Property Law Association) - US\$250
Award (China Association for Science and Technology) – US\$1,200

Dousabel Tay May Yi
NUS High School of
Mathematics and
Science

Ong Jun Yi and Jeremy
Goh Jin Quan
NUS High School of
Mathematics and
Science

SSEF Award Winners 2013

SSEF 2013 Gold Award

Project ID	Project Title
CH022	Nanostructured CoN,CoO and Co ₃ O ₄ as a high capacity and long life anodes for Li-ion batteries
CH079	Molar extinction coefficients of anisotropic semiconductor nanoheterostructures
CM014	Enhanced Adipogenesis by Sulfonylureas on Adipose-derived Stem Cells
CS009	Algorithms for flattening convex polyhedra
CS041	Secured Data Sharing With Decentralised Attribute-based Encryption
EB015	Comparative proteomics profile of different yeast strains for lipid accumulation mechanism exploration using iTRAQ labelling and LC-MS/MS analysis
EB041	Metal Membranes with Nano Pores for Water Filtration
EB050	Laser Initiated Formations of Silver Nanoparticles on Carbon Nanotubes
EB064	Interface modification for enhanced efficiency of organic solar cells
EE048	Development of a Magnetically Levitated Escalator System
MB028	Source of the last pandemic, host specificity mutations in swine flu
MH034	Investigating the anti-proliferative and pro-apoptotic effects of 6-gingerol and 6-shogaol extracted from Zingiber officinale
MH053	The Roles of the Metabolic Enzyme Fumarase and the Protein Kinase Snf1 in the DNA Damage Response
PA010	An investigation into the relationship between violin string timbre and its harmonic structure
PS003	Influence of the Edge Effect and Other Selected Abiotic Factors on Tree Seedling Density and Species Richness in a Tropical Forest in Singapore
VM001	Green Synthesis of Silver Nanoparticles using Lalang Extract
VM004	Vermicomposting technology: Part 1 - evaluation of the vermicomposts produced using water hyacinth; Part 2 - elucidation of the factor(s) responsible for growth promotion in vermicomposts

**Results are in alphabetical order*

SSEF 2013 Silver Award

Project ID	Project Title
CH016	Electrophilic Fluorination of Benzofuran
CH042	Functionalised Nanoparticle for Drug Delivery
CM011	Role of miRNAs in the Development of Insulin Resistance in Humans
CM020	Project to explore the potential anti-proliferative/pro-apoptotic effects of mangosteen peel extract and alpha-mangostin in triple negative breast cancer cell lines
CM043	The Roles of Mediator and of the AMP-activated Protein Kinase Complex SNF1 in Transcription and in the DNA Damage Response
CS012	iOS-based music player matching locomotion pace and music rhythm
CS037	Novel usage of Android smartphone sensors for motion and pointing gesture recognition
EB006	Bacterial Disinfection of Drinking Water by 3-Dimensional Titanium Dioxide Nano-Ribbon Particles

EB014	Colorimetric Detection of Melamine on the Basis of Gold Nanoparticles
EB025	Creating Pearlescent effects in Alginate Beads for Application in Bubble Tea Pearls
EB033	Targeted cancer detection using SERS nanotags in vitro
EB036	Enhanced thermoelectric performance in gradient Sn-doped Bi ₂ Te _{2.7} Se _{0.3} thin films deposited by DC sputtering
EB042	Doping of polymer organic semiconductor thin films for high performance devices
EB046	CaSnO ₃ as Anode for Lithium Batteries
EB071	Raman Spectroscopy
EB074	Fabrication of hydrophobic coatings using the sol-gel method
EE006	Prediction methodology of air blast loading in right-angled tunnel geometries
MB008	Investigating the presence of pathogenicity factors in Klebsiella pneumoniae isolated from uncooked food items
MB019	Study on the viability of crude-extracted Ipomoea batatas (sweet potato) carbohydrases to effectively break down Escherichia Coli biofilm on PVC surfaces
MH015	Measuring Inhibition: Proactive Control, Reactive Control and Academic Achievement in Inhibitory Load Manipulation
VS015	Traditional Chinese Medicine (TCM) Quorum Quenchers for Biofilm Prevention in Membrane Bioreactors (MBRs)

**Results are in alphabetical order*

SSEF 2013 Bronze Award

Project ID	Project Title
AS006	Investigating the Evolvability of Highly-Conserved Core Processes in Saccharomyces cerevisiae using Tetrad Analysis
CH015	Studies on High voltage cathode materials, LiVPO ₄ F
CH043	Supported heterogeneous ruthenium catalysts for N-alkylation of amine using alcohols as electrophiles
CH052	Real-time Optical Monitoring of Heterogeneous Reactions
CM006	Analysis of Mutants Affecting NFκB Signaling in Developing Zebrafish
CM013	Evaluation of CTLA4 single nucleotide polymorphisms (SNPs) and CTLA4 expression in bladder cancer patients as possible biomarkers to predict response to BCG therapy
CM028	Characterizing Antibodies Against the Stem Cell Marker Lgr5
CM036	Effect of Traditional Chinese Medicine Herbal Extracts on Water Permeability of Drosophila Melanogaster S2 cells
CM041	Identification and validation of novel therapeutic targets for human hepatocellular carcinoma through data-mining of gene expression microarray datasets
CS008	A Novel Method for Forensic Detection using Adhesive Tape Recognition
CS010	Automatic Grading of Cataracts Using Digital Images
CS014	Comparative Studies of Ab Initio Methods in Determining Molecular Properties
CS015	Biofeedback Devices for Parkinsons Patients
CS025	Active Learning for Immediate Predictions of Key Activities of Daily Living in Nursing Home
CS026	Understanding Gestures
EB019	Synthesis and Design of Multimodal Upconversion Nanoparticles through Functional Coatings

EB024	Investigation of BMP-2/ Salbutamol hemisulfate Incorporated PLGA Nanospheres for Targeted Delivery
EB040	Biomimetic Superhydrophobic Surfaces for Sports Apparels
EE012	6-Dimensional measuring system for Wind tunnel
EE019	An investigation into the potential of multi-directional fans to generate wind currents that can clean a room as well as ventilate it
MH016	Alpha-synuclein and LRRK2 functionally interact to promote proteasome and dopaminergic dysfunctions-implications for Parkinson's disease
MH023	Physicochemical properties of cocrystals involving a diuretic drug, hydrochlorothiazide
MH046	Tele-Rehabilitative Technologies for Home Therapy in Patients in Need of Post Discharge Rehabilitation
MS027	Mathematical Methods of Finding an Optimal Route to Construct a Mountain Road
PA013	Precision Ellipsometry of Molecular Layers in Gas and Liquid
PA015	Investigations of the Saffman-Taylor Instability in a Hele-Shaw Cell
PA016	Investigation of Optical Caustics from Illuminated Water Waves
PA027	Investigating the effect of fluctuating boundary on collapse and revival of a Gaussian wave-packet and its decoherence in an infinite square well
VM016	Early Warning Fouling Sensor for Spiral Wound Reverse Osmosis (SWRO) Membrane System
VS003	Investigating the removal of metal ions using magnetized spent coffee

**Results are in alphabetical order*

SSEF 2013 Merit Award

Project ID	Project Title
AS005	Deletion in the zebrafish Cyclops gene using customized transcription activator like effector nuclease (TALENs)
BC020	Optimization of Glutininase Inhibitors towards Cancer Therapeutics
BC027	The identification and isolation of possible bioactive compounds in Garcinia mangostana
CH009	Computational Methods of Predicting the pKa Values of Sulfonamides
CH019	Synthesis, Characterisation and High Energy Storage Studies on MgCo ₂ O ₄ and MnCo ₂ O ₄ as Anode Materials for Lithium-ion Batteries
CH020	Investigating the effect of coating TiO ₂ on polypropylene battery separator thin film
CH040	Reaction of Bis(oxy)enamines with Transition Metal Halides
CM012	Computer Game as a Visualization and Teaching Tool in Molecular Biology
CS022	Tapping on the affordances of IT to help students with learning disabilities learn better
CS032	Molecular Dynamics Simulation of ABA and BAB type triblock co-polymers of PEG and PLA
EB004	Multiplex PCR detection of bacterial infections
EB020	Ultrathin Terahertz Metamaterial absorbers
EB032	InVO ₄ as Promising High Capacity Anode Material for Lithium-Ion Batteries
EB038	A study of various properties of bio plastics synthesized from naturally occurring polymers
EB039	A feasible portable water purifier for refugees in a natural disaster aftermath
EE027	Investigation of high-intensity focused ultrasound tissue erosion
MB003	Antibacterial Activity of Synergistic Interactions between Medicinal Plant Extracts on Escherichia coli

MB015	Determining the antibacterial resistance of toothpastes- An in vitro study
MH041	Replacing biochemical methods for screening of G6PD deficiency using a novel two-tier screening approach based on short amplicon thermal denaturing analysis
MH042	Novel association of microduplication involving Monocarboxylate Transporter 8 (SLC16A2) gene with non-syndromic intellectual disability (NSID) and elucidation of a novel molecular mechanism of pathogenicity
MH051	Health Effects of Silver Nanoparticles
MS005	Performance Analysis of Sensor-Assisted Incontinence Management using Biostatistics
MS008	Fractals- an Investigation
MS010	The Hairy Ball Theorem and its generalisations
MS017	Broken Stick Problem
MS018	The Not-so-Perfect Roller
MS030	Linear vertex arboricity of graphs
PA012	Magnetic Domains in Thin Films with Perpendicular Anisotropy
PA023	Speed of Light Revealed
PS004	Study on Cross Protection between Tobacco Mosaic Virus(TMV) and TMV-43A
PS011	Analysis of and comparison between the Arabidopsis auxin signalling mutant axr2-1 and p-chlorophenoxybutyric acid on early root development
PS015	A study of the effects of ptaquiloside toxin from Bracken Fern, Pteridium aquilinum, extract on the rate of germination of Black Eyed Beans, Vigna unguiculata.
VM007	Plant Extracts to Reduce Membrane Biofouling
VS017	Effect of ultraviolet b light intensity on the synthesis of alleochemicals in Typha latifolia, which inhibit the growth of Chlorella vulgaris

**Results are in alphabetical order*

SSEF Special Award

Project ID	Project Title
CM005	Exercised-induced PGC-1alpha Expression does not Lower mtDNA Point Mutation Levels but Downregulates Tyrosine hydroxylase Expression in the Striatum
CM006	Analysis of Mutants Affecting NFkB Signaling in Developing Zebrafish
MH034	Investigating the anti-proliferative and pro-apoptotic effects of 6-gingerol and 6-shogaol extracted from Zingiber officinale

Broadcom MASTERS International Delegate

Project ID	Project Title
CM020	Project to explore the potential anti-proliferative/pro-apoptotic effects of mangosteen peel extract and alpha-mangostin in triple negative breast cancer cell lines

Intel ISEF 2013

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
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Prithvi Gundlapalli St Andrew's Junior College	Second Award in the category of Chemistry, Special Award, First Award from the American Chemical Society	Nanostructured Co ₃ O ₄ , CoO and CoN as High Capacity and Long Life Anodes for Li-ion Batteries Prithvi Gundlapalli did his project under the supervision of Dr. M. V. Venkatesh Reddy from National University of Singapore (NUS)
Darren Wong Yong Sheng Anglo-Chinese School (Independent)		Investigating the tubulin-mediated anti-proliferative and cytotoxic effects of 6-shogaol extracted from ginger (Zingiber officinale) rhizomes to determine its potential as an anti-cancer agent Darren did his project under the supervision of Mdm Yong Lee Har, Deputy Principal from Anglo-Chinese School (Independent).
Lee Wei Hao Joel, Phua Yue Jun and Tan Kwan Wei, Kevin Hwa Chong Institution		Green Synthesis of Silver Nanoparticles using Lalang Extract The team did their project under the supervision of Mrs Sow-Peh Yoke Keow, Principal Consultant (Research) at Hwa Chong Institution

SSEF Award Winners 2012

SSEF 2012 Gold Award

Project ID	Project Title
BC009	Study of a Zebrafish Olfactory Receptor OR131(2)
CH002	Detection of Electron Deficient Chemical Species by Natural Product Supported Ir(III) Complexes
CM030	The Role of PID-1 In Insulin Resistance
CS001	e-AID: Enabling Assistance and Independence to Home-Alone Elderly
CS006	Interactive Rehabilitation Game Development Using Natural User Interface Devices
CS049	Generalized Quantum Tic-Tac-Toe
CS063	Development of a tool based on MATLAB that automatically proofreads incorrect labelling of x-ray images of the hands
EB059	Dissolution Enhancement of Poorly Water Soluble Drugs
MH009	Treatment of BRAF(V600E) in Colorectal Cancer
MH041	Evaluation of In Vitro Anti-Cancer Activity of Imidazolium Salts Against Hepatocellular Carcinoma
MS008	Plane curves — An algebraic geometry approach
MS012	Weak Roman Domination
PA026	Microfluidic Particle Sorting Device Using Optical Forces
PA033	Adsorption and desorption of polar molecules using precision ellipsometry
PS015	Investigating the iron-mediated antiproliferative effects of mimosine (β -3-hydroxy-4 pyridone amino acid) from Mimosa pudica on Maize (<i>Zea mays</i>) embryos

**Results are in alphabetical order*

SSEF 2012 Silver Award

Project ID	Project Title
BC020	Comparative Study of Antimicrobial Activity in Common Edible Mushrooms
CH033	The Smart Glass for Cooling the Sunlight
CH058	Cocrystallization of Ethosuximide and Carbamazepine through green methods in the production of anti-epileptic combination drugs
CM003	Establishment of a proof-of-concept high content screen for small molecules inhibiting glioma growth
CM015	Identification of candidate regulators of mammary gland induction
CM031	Determining the amino acids involved in inhibition of PDE4B by structurally diverse compounds
CM063	Investigating the Role of Single Nucleotide Polymorphisms (SNPs) in Interethnic Differences in Statin Drug Response Pathways
CS020	Semi-automatic method for adhesive tape recognition using localized textural features based on fill-bucket algorithm
EB055	Recycling fruit skins for purposeful uses
EB071	Complementary Parrondo Processes with Paradoxical Mechanism in Evolution

EE028	Investigation and comparison of PZN and PZT transducers for the application of NDT for composite materials
EE051	Electrical Characterization of GaN based Semiconductors
MH001	Small Molecule Cancer Stem Cell Inhibitors
MH027	Ultrasmall Peptide Therapeutics for Inhibiting Amyloid Formation
MH031	To Determine the Effectiveness of Mycoglucans and Mycoproteins extracted from Basidiomycete Fungi in Eliciting Immune System Responses on T and B lymphocytes
MH035	Fenretinide Prevents Lipid-induced Insulin Resistance by Inhibiting Dihydroceramide desaturase and Blocking Ceramide Synthesis
MH047	Investigating the genetic basis of disease in a patient through whole exome sequencing
MS021	Investigating the middle game of Chinese Chess
PS003	Cellular basis for Abscisic Acid (ABA) regulation of abiotic stress responses in plants
PS014	Correlation between epiphytes and urban areas for landscape planning
VM012	Effect of Enzyme Augmentation on Membrane Fouling
VS003	Potential Applications of Tomato and Apple Peels as Biosorbents for the Removal of Water Pollutants
VS015	Molecular characterisation of off-flavour compound-producing Cyanobacteria in surface water samples

**Results are in alphabetical order*

SSEF 2012 Bronze Award

Project ID	Project Title
CH023	ZnO.Fe ₃ O ₄ hybrids as a promising anode for Lithium-ion batteries
CH024	Preparation and Characterization of cocrystals involving a diuretic drug, Hydrochlorothiazide
CH042	Formation of Imines under Continuous Flow-Techniques
CM008	Role of Transcription Coactivator WBP2 in Drug Sensitivity of Breast Cancer
CM040	Imaging the Spatial Distribution of Long-Term Depression in the Cerebellum
CM041	A Genetic Screen for the MicroRNA in Drosophila Border Cell Migration
CS050	The Art Gallery Problem
EB020	Interrogating Cooperative Interactions of Transcription Factors with composite DNA elements using Metal Nanoparticles
EB024	Cu Nanowire Arrays Prepared by A Simple Redox Deposition Method
EB033	Atomic Layer Deposition (ALD) and Comparative Assessments of its Metal Oxides for Transistor Applications
EB051	Development of a Serotonin Biosensor Using Human Serotonin Receptors Expressed in Mammalian Cells
EB053	Synthesis, Characterization and Application of Nitride Nanowires
EB066	Investigation of Copper (II) Oxide Nanowires And Quantum Dots Hybrid Systems
EB073	Delivery of potential cancer related proteins using a novel polymer
EE008	Location Tracking using WiFi
EE011	Dynamic Properties of Silica/ Nylon6 Nanocomposite
ET004	Deriving Biofuel from Waste Newspaper
MB017	Branched cationic siloxane-based polymers as anti-microbial agents in personal care products

MH006	Investigating the uptake of fluorescent BODIPY-CQ into malaria parasites using fluorescent plate-reader approaches
MH019	Study of the Mechanism of Traditional Chinese Medicinal herbs
MS001	Chong!Chong!Chong! The shortest path in Hwa Chong!
MS007	A General Method of Flattening Convex Prismatoid into Flat Sheet
MS015	Smooth Mafia
MS020	Algorithms for Constructing Efficient and Stable Networks
PA009	Theoretical Predictions for Rotating Rayleigh-Benard Convection
PS018	The Diversity of Symbiodinium in Scleractinian Corals in Singapore
VM004	Investigation of novel methods of reducing membrane fouling
VM016	Recycling waste through Mushroom Cultivation
VM021	Characterization and Optimization of Nutrient Removal in Rain Gardens

**Results are in alphabetical order*

SSEF 2012 Merit Award

Project ID	Project Title
BC003	Antimicrobial biomaterials to prevent biofilm formation by <i>Acinetobacter baumannii</i>
BC007	High throughput microdevice for IFN-gamma detection
BC014	Identification of age biomarker(s) in fingerprints
CH007	Design, synthesis and physical property evaluation of pharmaceutical cocrystals
CH012	Preparation, physical and electrochemical studies on CuCo ₂ O ₄ for Lithium Batteries
CH036	Synthesis of PNA monomer to target UA inversions in Tau Stem Loop RNA
CH051	Investigation and Optimisation of the reaction conditions for the use of an In-House Ligand-Supported Copper Catalyst for Azide-Alkyne Cycloaddition Reactions
CH061	Investigating the Use of Metal Catalysts in Iron Oxide Nano/ Microspheres For the Synthesis of 1,2,3-triazoles From Alkynes an
CS008	Think and Type: Decoding EEG Signals For A Brain Computer Interface
CS045	Simulating the Schrodinger Equation using FDTD on GPU
CS046	Video Processor
CS052	Promoting Independent and Healthy Lifestyle for Home-alone Elderly through Enabling Technologies
CS057	Sharpening of radar shadow edges in Ultra High Resolution SAR images
EB007	Synthesis of Novel Hydrogels for Anti-Cancer Drug Delivery
EB016	Inkjet Printing Photovoltaic Cells to Suppression of Coffee Ring Effect by Confinement Well Printing
EB028	Long-Term Delivery of Drugs and Hormones Using poly(L-Lactic Acid) (PLLA) /poly (D,L-lactic-co-glycolic acid) (PLGA) Core-Shell Microspheres
EB034	Novel Piezoelectric hybrid layered thin films for applications in non-invasive micro-surgical tools
EB043	Optimization of energy conversion from automobile waste heat using thermoelectric thin films
EB044	Tin-based Oxide Anodes for Lithium Batteries
EB045	Studies on the self-assembly properties of a class of ultras-small amphiphilic peptides by critical micelle concentration (CMC) measurements: Are these peptides able to form micelles?

EE016	Design of a Sensing-Limited Autonomous Robotic System for Area Coverage
EE017	Artificial Magnetic Conductor for BroadBand Control of Electromagnetic Scattering from Metal Surface
EE032	An Experimental Study of Reverse Dark Current in Silicon Avalanche Photodiode
EE058	Wearable devices for Stroke Patients
ET010	Aerodynamic Behaviour Of Flow Issued From Corrugated Airfoils
MH024	Baby's cognitive abilities in relation to Prenatal Maternal Health
MS027	On Some Combinatorial Identities
PA019	Cracking of Ice
VM001	Biofuel from microorganisms
VM008	Fungi Styrofoam
VM015	Tree-Free Paper Towels made by Recycling Coconut Husk Fibres
VM019	Isolation and characterisation of Lignocellulolytic Bacteria from animal dung
VS002	Removal of heavy metal ions using seeds as biosorbents

**Results are in alphabetical order*

SSEF Special Award

Project ID	Project Title
EE058	Wearable devices for Stroke Patients

Broadcom MASTERS International Delegate

Project ID	Project Title
CM003	Establishment of a proof-of-concept high content screen for small molecules inhibiting glioma growth

SSEF Award Winners 2011

SSEF 2011 Gold Award

Project ID	Project Title
CH57	Synthetic and polysaccharide based nanofibers for filtration of noble metal nanoparticles from aqueous environment
CH67	Investigating the fundamental photophysics of a potential donor-acceptor system for use in organic photovoltaic devices
CM16	The Effect of Nitric Oxide on Protein Homeostasis: Implications for Parkinson's Disease
CS09	Composing Right Frusta to fold Axial Symmetric Origami
CS32	Finding Security Bugs through Source-code Analysis
EB11	Secondary Ion Mass Spectrometry of Polyelectrolyte Micro-Capsules
EB23	Cryogenic Electrospun Scaffolds for Liver Tissue Engineering
EB39	Characterization of nano-ZnCo ₂ O ₄ material prepared by Molten Salt Method as an anode for Lithium Ion Batteries
EB86	Biomimetic Armour Based On Telson of Stomatopods
EE21	Designing Rubik's Cube Mechanism
MB24	Identification and Characterization of Bacterial Endophytes as Novel Bio-inoculants for Jatropha
MH18	Uncovering the molecular basis of syndromic intrahepatic bile duct paucity in local patients
MS19	The Covering Radius Problem for Perfect Matchings
MS45	Generalizations and Connections of Some Theorems in Classic Euclidean Geometry
PA01	Aspects of Compressive Sensing
PA27	Experimental and Theoretical Study of Beam-Steering Metamaterials
VM03	To Investigate the Adsorption Potential of Orange Peel Biosorbents for the Removal of Copper (II) Ions

**Results are in alphabetical order*

SSEF 2011 Silver Award

Project ID	Project Title
CH51	Development of DNA-nanoparticle Based Detection Systems for Chemical and Biological Agents
CM34	The Use of Labelled MSCs as a Delivery Vehicle for Lung Cancer in Mice
CM41	Molecular alteration of the TRPM5 channel in pancreatic β -cells and its effect on glucose tolerance
EB18	Preparation and characterization of Co ₃ O ₄ anode material for Lithium batteries
EB21	Laser patterning of graphene oxide in different gas environment
EB34	Fibrous Hydrogel for Long-Term In Vitro Cardiomyocyte Culture
EB45	Novel Piezoelectric Tactile Sensor Materials With Improved Properties for Biomedical Applications
EB48	Visualising Single Nucleotide Polymorphism using Nanoparticles
EB53	Detecting nucleic acid hybridization using gold nanorod solution in the presence of citrate

EB58	The Development of Aquaporin-Z Reconstituted 1, 2-Dioleoyl-Sn-Glycero-3-Phosphocholine (DOPC) Lipid Bilayer Membrane For water purification purposes
EB66	Methods for Generating High-fidelity Synthetic DNA
EE05	On Board Monitor, CPU, Keyboard and Mouse free Computation System for all and especially for
EE09	Air Bearing Slider-Flying inside a Hard Disk Drive
EE52	Solid State Diffusion Studies in micro-Solder Joints for 3D SiP Applications
MB11	To Investigate the Effects of Extracted Polyphenols from Green Tea (<i>Camellia sinensis</i>) and Banana (<i>Musa sp.</i>) Leaves for Antimicrobial Applications
MH09	Development and characterization of SEMA5A protein fragments for the inhibition of GLIOMA cell invasion
MH19	Endogenous and Exogenous Modulators of Parkinson's Disease (PD)-linked Mutant LRRK2-induced Neurotoxicity
MS22	Parrondo's Paradox: Re-investigating Games with Markov Properties
PA05	Investigation of the conditions under which a water jet operates as a light guide
PA06	Optimization of a coil gun for maximum projectile velocity
VM04	A Computer Simulation Study on Similarity Indices and Sampling Sizes Suitable for Comparing Forest Succession Dynamics in Singapore Nature Reserves
VS05	Analysis of the phytoremediative ability of macrophytes and a phytofiltration design for Singapore's waterways

**Results are in alphabetical order*

SSEF 2011 Bronze Award

Project ID	Project Title
CH31	New Transition Metal Catalysts For Important Organic Reactions
CH38	Gold-Catalyzed Direct Amination of Arenes Via C - H Bond Activation
CH44	Chromatographic Evaluation of Novel β -Cyclodextrin Derivatives as Chiral Stationary Phases for High-Performance Liquid Chromatography and Ultra-High-Performance Liquid Chromatography
CM42	To determine the effectiveness of mycoglucans extracted from Basidiomycete fungi in eliciting immune system responses on T and B cells
CS21	A Novel Method for Analyzing the Cognition of Music
CS22	Fighting Financial Crimes with Social Networks
CS45	Large Scale Cluster Analysis and Visualization with Efficient Parallelised Hierarchical Clustering Algorithms
EB13	Blinking of Quantum Dots
EB19	Studies on high voltage (4.8V) cathode, $\text{Li}(\text{Ni}_{1/2}\text{Mn}_{3/2})\text{O}_4$ for lithium-ion batteries
EB43	Electrodeposition of CoFeNi films with ultra-high permeability for high-frequency microwave
EB73	Creation of Polymer-based nano-structures by nano-imprinting
EE33	Wireless energy transfer
MB06	Biosorption of heavy metal ions by <i>Citrobacter freundii</i>
MH12	Study of phylogenetic clade 2.2.1 H5N1 viruses in Egypt
MH14	A Peripheral Lymphocyte Model of CD38 Gene Expression Regulation with Novel Implications for Treatment and Diagnosis of Autism spectrum Disorders

MH16	IBN-65, a novel small molecule induces cell-cycle arrest and apoptosis in p53 mutant human liver cancer cell Huh-7
MH24	A Search For Genetic Variants in the GRIN2B Gene in Patients with Bipolar Disorder
MH26	Delineating the cellular responses of insulin-producing cells to hyperglycemia: identifying new therapeutic targets for diabetes
MH31	Design of a Paediatric Antipyretic Dosage Form with a Temperature-Mediated Release Drug Reservoir for Fever Management
MH38	Screening For Drugs That Mitigate A β -Induced Neurotoxicity
MH48	Multineage Potential of STRO-1+ Human Mesenchymal Stem Cells
MS14	The Telephony Numbering Plan
MS17	It's a small world after all - An algorithmic approach to international flight network
MS34	Trigonometric Identities and Chebyshev's Polynomial
PA12	Variable Angle Magnetometry of samples with perpendicular anisotropy
PA15	An Analysis of Target Star Visibility for ExoplanetSat through Characterization of Exclusion Angles and Access Duration
VM01	Recycling Waste Coffee as a Green Source of energy
VM08	An Investigation on the Abilities of water weeds in Removing Heavy Metal Ions
VS06	Investigating the potential of ionic liquids as catalysts for esterification
VS08	Noval Lead (II) Ion Adsorption Performances of Titanate Nanotubes
VS15	Phytoremediation Potential of Tropical Aquatic Plants for the Removal of Macro-nutrients from Water

**Results are in alphabetical order*

SSEF 2011 Merit Award

Project ID	Project Title
BC03	Optimizing Excipient Formulation and Spray Freeze Drying Conditions to produce Nanoparticulate Aerosols with Good Morphology and Aqueous Re-dispersibility
BC10	Biochemical and structural characterization of the dimerization domain of stem cell transcription factor, Sox9
CH08	Synthesis and Characterization of PVK-PbS Nanocomposites Thin Films
CH32	Novel activation of terrestrial minerals as potential sequestering agents for carbon dioxide
CH37	Polymerizable Half-titanocenes for Olefin polymerization
CH50	Optical and Magnetic properties of Transition metals doped Zinc Sulphide nanoparticles
CM37	Polymerizable Half-titanocenes for Olefin polymerization
CM40	An in vitro study of ubiquitin in apoptosis via the JNK pathway
CS30	Security of National Registration Identity Card (NRIC) Numbers Online
EB09	Preparation of TiO ₂ Nanoparticles By Molten Salt Method And Its Characterization
EB30	Fabrication of nm-sharp tips
EB62	Single Cell Micropatterning on High Precision Extra-Cellular Matrix Scaffold
EB83	Synthesis and Characterisation of Co-polymer with High Charge Carrier Mobility for Application in Organic Field-Effect Transistors
EB91	Polymer-Core Solder Balls: The Alternative for Conventional Solder Balls
EE04	Behaviour of modified-lip nozzles
EE29	Analysis and adaptation of the geometry and design of Hoberman's Switch Pitch Ball
EE45	Assistive Technologies for the Elderly (A fall detection and notification system)

MB02	Investigating biodegradability of plastics produced by <i>Alcaligenes eutrophus</i>
MB17	Effects of anti-oxidants on UV-treated <i>Escherichia Coli</i> and <i>Saccharomyces Cerevisiae</i>
MB25	Investigating the Antibacterial and Antifungal property of Silver Nanoparticles
MH02	Use of a Novel Drug to Treat Breast Cancer
MH04	Investigating the effects of traditional herbs and IGF-1 on the production of collagen in animal fibroblast cells
MH07	Cell transplantation as a therapy for liver injury in animal model <i>Mus musculus</i>
MH33	Investigating the effects of combined inhibition of the MAP Kinase pathway and Telomerase in brain cancer cells ONS 76 and KNS 60
MH35	Evaluating the cariogenic potential of <i>Synsepalum dulcificum</i> , the miracle berry
MH42	Targeting telomerase in combination with radiation in brain tumour cells
MH46	Andrographolide Inhibits Autophagy and Sensitizes Human Tumor Cells to Cisplatin-induced Cell Death
MS43	The brachistochrone Problem and Calculus of Variations
PA18	Wireless Energy Transfer to Piezoelectric Devices through Magnetic Resonance
PS04	Effect of UV exposure on allelochemical production, such as phenols, in <i>helianthus annuus</i> foliage leachates and <i>Ipomoea purpurea</i> response to these leachates
VM05	Thermogravimetric (TG) testing of Ni-on-stabilized-magnesia catalysts for biomass gasification (BMG)
VS04	Evaluating Different Methods of Synthesising Biodiesel (Extension)
VS26	Investigation of Carbon Nanotubes as an Effective Nanosieve

**Results are in alphabetical order*

SSEF Award Winners 2010

SSEF 2010 Gold Award

Project ID	Project Title
CS27	Automated Characterization of Ultra-light Metal Foam from μ CT Reconstructed Images
EB16	Quantum dots-loaded Smart Polymeric Patterns
MB31	Bacterial Resistance to Dettol
MH11	The Interplay Between Iron and Alpha-synuclein in Neuroinflammation
PA14	Interactions of Two Types of Domain Walls in [Co /Pd]/Co Multilayer Films
CM04	EGCG mitigates Parkinson's Disease-associated mutant LRRK2-induced Neurotoxicity via protein Translation Modulation
MH31	Anti-viral function of T cell receptor gene modified T cells
EB54	Alteration of electrical resistivity in ZnO nanowires using adsorbed gas molecules
CH03	Isolation of Biologically Active Compounds from Cassia Auriculata Linn
MB09	Synthesis of biodegradable plastics from bacteria
MH35	Potential of Barnacle Cement in Dentistry
BC09	Re-engineering Tryptophan tRNA synthetase
CM36	IgE epitope mapping of dust mite group 7 allergens to prepare hypoallergen for immunotherapy
CM02	Cationic Polymers for Gene Delivery
MB01	Glucose, Lactose and Fructose Fermentation by Intestinal Bacteria in a Continuous Culture System

SSEF 2010 Silver Award

Project ID	Project Title
EB26	Fabrications and Optical properties of Molybdenum Trioxide and Zinc Oxide Hybrid Nanoflowers
VS11	Carbon Nanotubes as Efficient Nano-sieve for Removal of Nanoparticles from Turbid Water
CH40	Functional Electron Donor-Acceptor Organic Semiconductors for Solar Cells
MB30	Comparative Analysis and Structural Bioinformatics of H1N1 Glycoproteins
EB42	Biomimetic study of one of nature's 'super villian'- the mantis shrimp
EE37	Directional Localization of Objects Via 2.4GHz Wireless Signals
MS13	The Mathematics behind Google PageRank
MS08	Applications of Spidrons
MS22	Envy Free Chore Division
EB03	Catching Viruses with Molecularly Imprinted Polymeric Nanoparticles
MH24	Study on the Role of WBP2 in Tamoxifen Resistance of Breast Cancer
PA05	A Study of Optical Parameters for Resolution Enhancement in a Solid Immersion Lens System
MB07	Antibacterial and Antioxidant Properties of Fruit Peels

MH19	Novel Applications of Aminoglycosides and Poly-Aspartic Acid (PAA) for gene repair in Duchenne Muscular Dystrophy (DMD)
EB70	Statistical Study of Damaged Cartilage Using Magnetic Resonance Imaging
PS05	Investigating the Inhibition of Root Growth in <i>Allium cepa</i> induced by varying concentrations of cyanogenic glycoside gynocardin from <i>Pangium edule</i>
EB39	Utilization of Macroalgae as an Alternative Feedstock for Biorefinery Processes to Produce Sustainable Fuels through Microbial Fermentation
EB14	Optimizing Production of Plasmon Rulers made from Gold Nanoparticles coupled with DNA
EB10	Pt impregnation on Co containing MCM-41 and its effect on catalytic activity in carbon dioxide reforming of methane
MB24	An investigation into the extent of the effectiveness of seed treatment of the tomato plant (<i>Solanum lycopersicum</i>) with <i>Pseudomonas fluorescens</i> in conferring resistance to the plant against <i>Fusarium oxysporum</i> infections (<i>Fusarium</i> wilts)
MH32	Inhibition Of Telomerase and DNA Repair In Human Glioblastoma Cells

SSEF 2010 Bronze Award

Project ID	Project Title
EB46	Fabrication of Undoped ZnO and Mn-doped ZnO Dilute Magnetic Semiconductor Nanostructures via Vapor Transport Method
MB03	Analysis of draught beer spoilage bacteria
MB10	Mutagenesis of the magnetotactic bacteria <i>Magnetospirillum magnetotacticum</i>
CH25	Investigating the Properties of Organic Polymer Solar Cell incorporating Carbon Nanotubes
PA17	Effects of Micropatterning on the Nanosieving Capabilities of Vertically Aligned Multi-walled Carbon
EB32	Enhancing self cleaning ability of photocatalyst TiO ₂ via doping
CM29	Assessing the genetic variability of the RXRa gene between two distinct populations.
CM19	Effect of Andrographolide treatment on membrane trafficking of scavenger receptors
MH09	A Study on the Anti-Proliferative Effects of MST-312 on Human Brain Tumour Cells
CH18	Catalyst Development for Cellulose Hydrolysis
PA32	Variable Angle Magnetometry of Thin Films with Perpendicular Anisotropy
MH06	To Investigate the Feasibility of Pressure Insoles in Estimating Ground Reaction Forces During Gait Analysis
EB04	Sensors based on Surface Plasmon Resonance in gold nano-layer by attenuated total reflection method
CH21	Analysis of potassium ions using prussian blue nanotubes for application in blood analysis
CS42	Mining protein complexes from protein-protein interaction networks using quasi-cliques
BC04	Green Sustainable Bio-Chemistry: Comparing the Costs between Biological and Chemical Peptide Synthesis
BC16	Reducing oxidative stress using cardioprotective exosome with NADPH-generating enzyme.
CH51	Electrochemical nucleic acid sensor based on nanoporous membranes
EB23	Designing A Microdevice To Isolate Circulating Tumour Cells From Peripheral Blood
EB66	Biodegradable Microspheres for use in Tissue Engineering

CS38	Mining Atomic Interaction Patterns in Antibody-Antigen Complexes
VS01	Evaluating Different Methods of Synthesising Biodiesel
CS11	Dynamic Vehicle Routing and Fleet Management
CH43	Novel Nanomaterial Architectures to Construct Surface Enhanced Raman Spectroscopy substrates for Biosensing
MH15	Discovery of Biomarkers Using Comparative Profiling
EE27	Electrical characterization of semiconductor-insulator interfaces in VLSI/ULSI technology
PS09	Investigating the Digestive Enzyme Inhibitors of Bean Extracts
VS05	A Novel Hybrid Forward Osmosis-Nanofiltration Techonology for Seawater Desalination
CS05	Ambient Intelligence For Home-Based Elderly Care
MS24	Understanding Flocking Dynamics in Nature

SSEF 2010 Merit Award

Project ID	Project Title
MS04	Voter Models on a Graph
MH20	A Novel Approach to Detecting Duchenne Muscular Dystrophy Genotypes from Whole Genome Amplified DNA by High Resolution Thermal Denaturation
CS35	Ambient Intelligence: The Use of Multimodal Sensing Bed in Patient Monitoring
EB12	Incorporation of Biological Components into Electrospun Scaffold
CH37	Development and Synthesis of Ag-nanoparticles for Organic Photovoltaic Cells
MH21	Phosphoproteomic Analysis of Metastasis in Colorectal Cancer
EB75	The Study of Deformation Mechanisms of Bulk Metallic Glass
CS54	Comparison of AAS Software Using Mutations from Duchenne and Becker's Muscular Dystrophy Patients
EB31	Folic Acid Conjugated Thermoresponsive Polyrotaxane Nano-Capsules For The Controlled and Targeted Delivery of Chemotherapeutic Drugs
MB12	Screening of Anti-fungal Agents Against Candida albicans from Local Fungal Extracts
AS02	Effects of Microclimatic Variations and Habitat Disturbance on Frog Communities in Singapore
VS16	Growth and kinetic studies of tropical aquatic plants in the presence of macro-nutrients accumulation
PA11	Formation of Sand Ripples Under the Influence of Shallow Water Waves
MH02	A Study into the Relationship between Lactobacillus Rhamnosus GG and Colon Cancer Cells
VS03	Chemically modified chitosan as potential metal chelators
BC12	Avidin conjugated up conversion fluorescent nanoparticles for specific cellular imaging
EB63	Removal of noble metal nanoparticles from water using electrospun biocompatible nanofibres
CH35	Solid-state Reactivity of Hydrogen-bonded Organic Salts
EB77	Lab on a chip Dengue virus detection
PA08	Fluid Needles: transforming shockwaves into syringes
EB17	Electromechanical Coupling of Polymeric Films studied by using Piezoresponse Force Microscopy
EE18	True Random Number Generator

ET03	Centripetal acceleration in corkscrew loops
MS34	Reve's Puzzle
PA21	Precision Ellipsometry of Ultra Thin Layers
MS31	Counterfeit Coin Problem: An Exploration of the Original Problem and its Variations
MH16	Screening of Phenotype Modifiers in Spinal Muscular Atrophy (SMA) Patients
MB11	Anti-bacterial properties of Lucillia Cuprina flies
CH12	Extraction of Natural Product using Ionic Liquid
CH49	Synthesis of Suitable High-Temperature CO ₂ Adsorbent for Enhanced Water-Gas Shift Reaction
CM18	Study of Runx 3 involvement in Leukemogenesis
MB16	Larval Peptides-A Novel Source of Antibiotics from Lucilia Cuprina Maggots

Intel ISEF 2010

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
Cheng Jingjie Raffles Girls' School	Second Award in the Cellular and Molecular Biology category	Investigating the mitigating effects of Epigallocatechin Gallate (EGCG) in Parkinson's Disease
Edrei Chua Zheng Fu National Junior College	Third Award, at the Society for Applied Spectroscopy, in the Special Award category from the Northern California Section of the Society for Applied Spectroscopy	

SSEF Logo Design Competition Results

Winner

Name	School
Daniel Siew	Raffles Institution

Consolation Prizes

Name	School
Kieu Hoang Kien	Anglo Chinese School Independent
Chan Yarn Kit	Hwa Chong Institution

SSEF Award Winners 2009

SSEF 2009 Gold Award

Project ID	Title
CM11	Association of a Novel Hsp70 Species with Brain Aging and Proteasome Dysfunction
CM12	Elucidating the mechanisms involved in pore formation on human embryonic stem cells by a cytotoxic antibody
CM13	Identifying Protein Phosphorylation in Relation to Metastasis of Colorectal Cancer
CM31	PCR-Array based analysis of p-53 target genes regulated by small organic molecules
EB37	Incorporating Productivity in Congestion Models using 4D CAD
EB63	Nanofibers derived from Poly(vinyl alcohol) and cellulose based polymers by electrospinning process
ET05	Production of hydrogen by photocatalytic reforming of methanol over metallized TiO ₂
MB10	Antibacterial Activity of <i>Lucilia cuprina</i> Maggots
MH09	Changes in Brain Lipids During Neurodegeneration
MH14	Membrane Development for Application in Bioartificial Organs
MS18	Roman Domination
PA15	Berry's Phase for the Imaging of Micromagnetics System
PA18	Magnetic Anisotropy in epitaxial and polycrystalline cobalt thin films
PA29	Optical and Magnetic Anisotropy of Thin Cobalt on Calcium Fluoride Films

**Results are in alphabetical order*

SSEF 2009 Silver Award

Project ID	Title
CH19	Electrochemical sensing of biomolecules using nanomaterials-based electrodes
CM22	Synthesis and Characterisation of Disulfide-linked Cationic Polymers and The Effect of Amphoteric Behaviour on In Vitro Transfection
CM25	Identification of optimal bio-markers and antibodies for renal cell sorting used for the establishment of co-cultures of human kidney cells
CM29	Secretion of the human fetal tissue-derived mesenchymal stem cells is similar to that of the human embryonic stem cell-derived mesenchymal stem cells
CM32	Investigating how time and concentration of heptanol affect the gap-junctional blocking effect on vascular endothelium
CM35	Proteins in Cardioprotective hESC derived-MSC Secretions are Encapsulated in Exosomes
CM37	Development of a novel bio-engineered 3D skin
CS07	A Novel Non-Iterative Algorithm for Perfectly Flat Histogram Equalization

EB08	Hydrothermal Growth of Vertical ZnO nanorod arrays using textured ZnO seeds
EB45	Direct Replication of Lotus Leaf Surface Using Polymer Casting
EB67	Sustained Release of Small Water Soluble-Drugs with Double-Walled Polymer Microspheres
EB75	A Novel Approach of Engineering Functionality of Primary Hepatocytes in Three-Dimension
MH05	To investigate genetic polymorphisms that may influence infection susceptibility in children with acute leukaemia
MH19	The Effect of the Duration of Heating on Soybean Trypsin Inhibitor
MH23	Pharmacogenetics of Constitutive Androstane Receptor Gene (CAR; NR1I3) in Three Distinct Asian Populations
PA02	Nanophase - Metal Carbonate as Anode Material for Li-Ion Batteries
PA06	Investigation of inhomogeneous cosmological models on consistency with observational data
PA19	Sustained Laser-Induced Incandescence of Carbon Nanotubes and its Applications
PS02	Clean and renewable biofuels from plants - Part 1: Characterization of potential bio-fuel crop plants
VS09	Forward Osmosis for Clean Water Production using Magnesium Sulfate

**Results are in alphabetical order*

SSEF 2009 Bronze Award

Project ID	Title
BC17	Engineering topology and structural folding of DNA G-Quadruplexes
CH03	The halogen bonds in liquid crystal
CM27	Synthetic anti-oxidants as novel candidates for Hepatocellular Carcinoma therapy
CM34	A study on computational modeling of cell migration in crowded microchannels
CM42	Detection of Genetically Modified Foods of Plant Origin
CS04	GPU-accelerated algorithms in bioinformatics
EB25	Engineering of egg-shell membrane based bone growth medium
EB53	ShrImP - Shear thickening Impact Protection, A Bio-inspired Impact Protection System
EB74	Shape-Controlled Synthesis of Gold Nanocrystals and Their Application for Mercury Detection
EE06	Forming of micro-stepped-pin
EE21	Full-wave simulation of high-speed connectors for electromagnetic interference and signal integrity analysis
MB08	Mutagenesis of the magnetotactic bacteria <i>Magnetospirillum magnetotacticum</i>
MB14	WEfficacy of plant essential oil combinations in killing <i>Escherichia coli</i> in vitro and on spinach

MH13	Bioinformatics and Comparative Analysis of H5N1 Glycoproteins
MH16	Bicontinuous Microemulsion-based Polymer as an Artificial Cornea Scaffold that Supports Ocular Surface Reconstruction
MH20	Development of an oncology database for drug interactions of anti-cancer drugs with Complementary and Alternative Medicine
MS15	Physical Construction of Surfaces with Mesh Optimisation
PA08	Investigation of Laser-induced Carbon Nanotube Actuation
PA12	Structure Analysis of Graphene Formation on SiC Substrate
PA16	Integrated Microfluidic and Optical Sorting Device
PA44	A Dynamical Analysis of Magnetotactic Bacteria
VS18	Design and optimization of a portable low-cost thermal distillation modular unit

**Results are in alphabetical order*

SSEF 2009 Merit Award

Project ID	Title
BC08	Four-stranded DNA Topologies of Telomeric Sequences
BC15	Heparin Immobilisation Techniques for Optimised Binding and FGF-2 Bioactivity
CH05	Supramolecular Self-Assembly
CH32	Reversible Phase Transfer into and out of Micelles and Cell Membranes
CH42	Characteristics of synthesized polymer, poly(acrylic-co-acrylamide) potassium salt at varying temperatures
CM01	Evaluation of a XBP-1S-based Expression System for Recombinant Protein Production in Mammalian Cells
CM07	Autophagy in the Etiology of Acute Myeloid Leukaemia with Nucleophosmin Mutation
CM16	Microcarrier cultures of Induced Pluripotent Stem (IPS) cells in static and agitated conditions
CM19	Expression and purification of a novel human Interferon γ / IgG1 fusion protein
CS05	Friendship Rankings on Social Networks
CS16	Partition-based Hierarchical Single-Link Clustering Algorithm
CS19	Arimaa: Building a Better Evaluation Function
EB01	Luminescent Silk for Value-Added Wound Dressing
EB17	Novel Ferroelectric Capacitor for Non-volatile Memory Storage and Biomedical Tactile Sensor Applications
EB21	Characterization of the Structural Colours (Peacock Feather)
EB48	The effect of different composition of organic solvents on performance of sulfonated per fluorinated polymers as proton exchange membrane
EB49	Study of nitrogen doping effect on band offsets of amorphous Ge ₂ Sb ₂ Te ₅ film on Silicon Oxide using X-ray photoelectron spectroscopy (XPS)

EB59	Slide-Ring" Gels
EB82	Developing 1-D nanomaterial p-n junction arrays on flexible substrates: from assembly methodologies to device applications
EE10	Design and Development of an Automated Electric Motorized Crutch
EE18	Simulator Development for Sidescan Sonar Image
MH24	Modeling dyslexia by simulating the brain
MH25	Relating HbA1c to Personal Profile
MS02	The Ames Room
EB82	Developing 1-D nanomaterial p-n junction arrays on flexible substrates: from assembly methodologies to device applications
MS13	The pool hits: an analysis of the routes of balls in pool
PA03	Investigating ways to visualize and define lens spaces
PA20	IRIDESCENT COLOURS IN NEW ZEALAND ABALONE SHELL
PA28	Tuning the Hydrophobic Nature of CNT Arrays with Micro-Patterning
PA35	Investigation on the effectiveness of an amateur radio telescope in a high radio emission environment
VS08	Removal of Water Pollutants using Silver Nanoparticles

**Results are in alphabetical order*

Intel ISEF 2009

Details of ISEF 2009 Representatives

Students	Project Description
Roderica Ng Rui Ge (National Junior College)	Membrane Development for Application in Bioartificial Organs
Nicholas Chen Fang Yew (NUS High School)	Berry's Phase for the Imaging of Micromagnetics System
Koh Zhe Wei, Joseph Ang Qianbo and Ong Kai Zhi (Hwa Chong Institute)	Antibacterial Activity of <i>Lucilia cuprina</i> Maggots

Singapore's Withdrawal from ISEF 2009 Due to Flu Pandemic Alert

In view of the recent Influenza A pandemic alert, it was debated and finally decided that our representatives would not take part in ISEF 2009. MOE had issued advisories to schools to ask all to observe all travel advisories issued by MOH and to review all travel plans particularly to affected countries (i.e. the United States and the state of Nova Scotia in Canada as of 2 May). We look forward to Singapore's participation in ISEF 2010.

SSEF Award Winners 2008

SSEF 2008 Gold Award

Project ID	Title
BC26	An Investigative study into the production, extraction, and pesticidal properties of glycoalkaloids in <i>Solanum tuberosum</i>
CH27	Iron Catalyst of Polymeric Schiff bases for Ethylene Polymerization
CM28	Transcription Factor Binding Sites in Mammalian Genomic Repeats
EB03	Synthesis of Mesoporous Carbon Nanofibers
EB43	Synthesis and Characterization of Gold Nanotubes
EB52	Dynamic Materials Testing
EB62	Nanofabrication with Focused Sunlight
EB81	GaN-based LEDs On Silicon-on-Insulator Substrate
EE24	Transcritical CO ₂ Heat Pumps - Improving Efficiency and Exploring Applications
MB01	Bacterial Resistance to Dettol
MH20	Development of a 3D in vitro breast cancer model using thixotropic PEG-Silica gel
MS01	Enigmatic "Bi-Circular" Property of Triangles - Wang Tong Theory
PA10	Analysis of Colloidal Crystals and Its Inverse Structure
PA23	Magnetic Anisotropy in Epitaxial Cobalt Films

**Results are in alphabetical order based on project ID*

SSEF 2008 Silver Award

Project ID	Title
AS05	Living in the filth of juices: The chemistry behind the life of pitcher spiders
BC11	Crystal structure determination and characterization of <i>Trypanosoma brucei</i> PIN1
BS03	Building a Responsible Public : Boycott to Solve Singapore's Haze Issues
CH06	Extraction, isolation and identification of triterpenoids from dried lingzhi (<i>Ganoderma lucidum</i>) fruiting bodies
CH09	Development of Mesoporous Polymer Particles and their Applications
CH28	Direct asymmetric three-component Mannich reactions catalyzed by a siloxy serine organocatalyst in water
CM26	Functional Characterization of interaction between Galectin-1 and Cav1.2 Calcium Channels
EB10	Study of Water Vapour Transport Mechanism through nanostructure barrier stacks
EB15	Development and Biomimic of Synthetic Gecko Foot-hairs from Carbon Nanotubes
EB30	Hyaluronic Acid - Green Tea Catechin Conjugate and its Application in Protein Delivery

EB34	Effects of annealing on properties of nano-structured Mg composite
EB45	Response of an osteolytic tumor to anti-osteolytic treatments using bone structural analysis
EB49	A Novel PHBV Microsphere-Gelatin Hydrogel Scaffold Composite for Liver Tissue Engineering
EB53	Synthesis and characterization of novel magnetoelectric multiferroic materials
EB60	Lifetime studies of P3HT:PCBM system for Organic Photovoltaics
EE27	Investigation and Control of Heating Plate Temperature Using Virtual Instrumentation
EE40	An Investigation on the Contemporary Current Sense Amplifier in SRAM Applications
MH29	Transport Enhancement and Improved Selectivity of Chlorin e6 polyvinylpyrrolidone on the chorioallantoic tumor model
MS02	Exploration on the Tower of Hanoi game with k pegs for k is greater than or equals to 4
MS10	Span of L(2,1)-Labelling on Graphs
PS05	Optimization of transformation and growth of Dendrobium chao praya gem (DCPG) orchid calli

**Results are in alphabetical order based on project ID*

SSEF 2008 Bronze Award

Project ID	Title
CH35	Optimising the oxidative desulphurisation of diesel with Mn/Mo loaded on gamma alumina and airflow rate
CM01	Investigation of the interaction between a novel cell adhesion molecule hepaCAM and the caveolar structural protein caveolin-1
CM30	Gene expression analysis of early embryonic development
CS19	SCE7: Developing an efficient clustering algorithm using GPU
CS26	Server-Side Solution to Detect and Classify Phishing Email Scams
EB14	PRO NANO (Project of Nano Antibacterial Zinc Oxide)
EB44	Surface functionalized nano-magnetic particles for separation of amino acids
EB48	Innovative Applications of Household Materials in war - Supercool Science, Shear Brilliance & Extreme Expansion
EB66	Dye-sensitized TiO ₂ solar cells using natural dyes
EB69	Effect of Incorporating Methyl β -Cyclodextrin on the thermal gelling properties of Pluronic F 127
EB75	Cadmium-free Quantum Dots for Glutathione Sensing
EE02	Simulation of Human's Climbing on Humanoid Robots
EE07	Utilizing plasma effects to realize plasma thruster
EE09	Customization of Foot Insoles

ET01	Palm Fatty Acid Distillate, a Promising Feedstock for Biodiesel Production: Comparison of a Biocatalyst and a Solid Acid Catalyst
ET09	Study of Boundary Layer for Differing Viscous Cylinder Flows
MB07	Antagonistic Interactions between TCM Extracts and Ampicillin against Gram-positive and Gram-negative Bacteria
MH30	Gene Dosage Analysis for Diagnosis and Population Screening of Spinal Muscular Atrophy (SMA)
MS04	Channel Contention in a Wireless Mesh
PA14	Time-resolved Brewster Angle Imaging on Photo-responsive Molecular Nanofilms
PA16	Investigation of Photon Entanglement Through Distant Sources via Realistic Computer Simulations
VM02	Modelling and simulation of bio-energy production through wastewater treatment

**Results are in alphabetical order based on project ID*

SSEF 2008 Merit Award

Project ID	Title
BC12	Screening of Natural Compounds for Induction of Melanogenesis in Murine B16 Melanoma Cell Line
BC22	The Effect of Citrus Latifolia on Lipids
BC23	Screening of chemicals for induction of melanogenesis in B16 melanoma cell line
BC28	NMR Study of Non-canonical DNA Structures of the Telomeres
CH23	One pot-synthesis of carboxylate-capped spherical gold nanoparticles
CH32	Reversible Wetting of Titanium Dioxide Nanoparticulate Films
CM02	Effect of herbs on gene expression in Escherichia coli
CM11	In vitro study of Hepatocytes Cultures in a Biocompatible Polymeric Scaffold in Comparison to 2D Cultures
CM20	Identification of Additional Genetic Changes in Down Syndrome Related Leukemia (DS-AMKL): leukemia gene hunting
CM25	Regulation of Oncogene TAZ in Breast Cancer Cells
EB09	Fabrication of BEEM-compatible metal/organic/silicon devices
EB38	Optimum Temperature for maximised Pt coverage in Pt shell-Au core electrocatalyst for use in Direct Methanol Fuel Cells
EB61	Investigation of novel beta-CN fluorene derivative for solar cell applications and its influence on key parameters affecting device performance
EE25	Utilization of TiO ₂ Nanofibers to Increase the Efficiency of Dye-Sensitized Solar Cells
MB04	Investigating the antibacterial properties of metal nanoparticles
MH05	Identification of a novel single nucleotide polymorphism in the Serum Amyloid A gene
MH24	Investigation of possible pathogenic mitochondrial mutations in mitochondrial genes in childhood acute lymphoblastic leukaemia and normal controls

MH33	Mutational Analysis of NPHS2 Polymorphisms in South-east Asian Chinese Children with Steroid-resistant Nephrotic Syndrome and Correlation with Clinical Outcome
MS09	Modeling the population growth in Singapore
PA08	Investigating radially polarised light and its approximations
PA24	Ni metallic cluster growth on TiO ₂ (110) surfaces and the dependence of its core-level binding energy on cluster sizes in x-ray photoelectron spectroscopy (XPS)
PA30	Adaptive and modular fast beam steering using birefringent crystals and polarization switchers
VS10	Leading-Edge Technology: TiO ₂ Nanotubes for Heterogenous Photocatalysis in Water Processes

**Results are in alphabetical order based on project ID*

Intel ISEF 2008

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
Zhao Ye and Zhai Weichao NUS High of Mathematics and Science	First Award of \$3,000 in the Team Project Category and Third Award of \$300 (Special Award from Sigma Xi, The Scientific Research Society)	Nanofabrication with Focused Sunlight
Jianyang David Yin Raffles Junior College	Third Award in the category of Engineering: Materials and Bioengineering	Hard-Templating Synthesis and Characterization of Mesoporous and Electrically Conductive Carbon Nanofibers
Lim Yi Hui National Junior College	Fourth award in the category of Chemistry	Iron Catalyst of Polymeric Schiff Bases for Ethylene Polymerization

SSEF Award Winners 2007

SSEF 2007 Gold Award

Project ID	Title
AS09	Studying the Effects of Tol2 on Two Transgenic Danio rerio Lines; ET33 and ET33E20
CB07	Elucidating the functional diversity of BCH/sec14 domains
CB20	Cdc42 Binding to IRSp53 Induces Filopodia Formation and Causes Localization of IRSp53 to the Leading Edge of Motile Cells
EB02	PRO NAZO [The Project on Nano Antibacterial Zinc Oxide]
EB11	Synthesis of hyaluronic acid-flavonoid conjugates and their biomedical applications
EB46	Effects of tensile stress on the formation and growth of nickel monosilicide (NiSi) using thin Ni film on Si (001)
EE15	Design and control of an Omnidirectional Mobile Robot
EE31	Wireless Sensor Networks for Home Security
EE45	Railgun- Design and Construction of an Electro-Magnetic Acceleration System
MB05	Anti-Microbial Properties of Natural Extracts against Escherichia coli and Micrococcus luteus
MH14	Development of a Novel Approach for Applications in Preimplantation Genetic Diagnosis of Duchenne Muscular Dystrophy
MH18	Determination and Quantification of Functional Biofluid Proxies
MS05	Reflection Within Conics
PA10	Scanning Mirror on a Vibrating Membrane for Dynamic Optical Trapping

**Results are in alphabetical order based on project ID*

SSEF 2007 Silver Award

Project ID	Title
BC04	Analysis of Molecular Forms of CD38/ADP-Ribosyl Cyclase from Rat Liver
CB08	Extracellular PDI in cell adhesion: breaking old bonds, forming new links
CB25	Crystal structure determination of a complex involving the fat protein
CB33	Isolation of Endothelial Progenitors using Human Fetal and Umbilical Cord blood for Therapeutic Cell Transplantation
CB37	Investigation of the DNA Binding properties of the embryonic stem cell transcription factors OCT4 and SOX2
CH05	Helical Mesoporous Silica from Achiral Cationic Surfactant Template
CH19	Separation of Proteins
CS04	Crystal- A Light-weight Fail-safe Web Architecture for Distributed Applications
CS08	Cartoonic Visualization of Zodiac Pig

CS17	A Wavelength-Division Multiplexing Optical Communication System With Unequal Channel Spacing
EB21	Preparation and characterization of rare-earth modified multiferroic BiFeO ₃ ceramics
EB31	Configuration of Hydrophobic/Hydrophilic Properties Through Laser Pruning and Ion Sputtering
EB32	Probing Residual Stress In GaN And ZnO Free-Standing Micro-Structures Using Raman Spectroscopy
EE06	Study of Two-fluid Flow in a Microchannel
MS01	Harmonic Radar for Small Animal Tracking
MS10	Tower of Hanoi--- The analysis of algorithms for 4 peg and 5 peg games
PA11	Near-edge X-ray Absorption Fine Structure (NEXAFS) investigation of X-ray irradiation damage to oligonucleotides
PA12	Secondary Ion Mass Spectrometry of Adsorbed Molecular Layers

**Results are in alphabetical order based on project ID*

SSEF 2007 Bronze Award

Project ID	Title
BC09	Purification of CD38/ADP-Ribosyl Cyclase from Rat Liver Microsomes
BS09	Food Labelling in Singapore: Its Role and Effectiveness
CB14	Cross species sequence analysis of genetic and T-cell epitope antigenic diversity in H5N1 influenza virus
CB29	Investigating the effect of 3' untranslated regions from GFAP Splice Variants on mRNA stability using a reporter construct
CH04	Cytotoxicity and Anti-Quorum Sensing Activity from Marine Organisms
CH18	Studies in Quantum Chemistry using the Fragmentation Technique
EB09	Engineering of Novel Potassium Selective Biosensor with Nanomaterials
EB38	Exploring PLGA Polymer Beads Encapsulating Quantum Dots and Drug Camptothecin
EB48	Development of epoxy based silicon carbide coatings for penetration resistance
EB56	Deformation of Ionomeric Polymer Metal Composites (IPMC) Due to Ion Migration
EB66	Cu ²⁺ ions immobilized in bisphosphonate-Cu ₃ (PO ₄) ₂ nanoparticles can adsorb urea
EE43	Wireless System to Control RFID Gate Gantry and Video Camera Vigilance
MH05	Glucocorticoid Receptor Polymorphisms and Expression in Childhood Acute Lymphoblastic Leukaemia (ALL)
MH11	TCM herbs as a source of compounds with hematopoietic and anti-cancer properties
MS14	Span and Edge-span of T-colourings on Graphs
PA03	Neutron Emission From Plasma Focus Device Using Innovative Dense Plasma Focus Heads
PA06	Resolution enhancement of Raman Microscopy

PA17	Magneto-optical Kerr Effect on Thin Cobalt Films
VA03	Photo Catalytic Oxidation Process on Removing Humic Acid
VM02	Converting Heavy Metals into Crystal Material

**Results are in alphabetical order based on project ID*

SSEF 2007 Merit Award

Project ID	Title
BC06	Microbial Fuel Cell As A New Teaching Device- Investigating New Parameters to Create an Efficient Teaching Device
BC13	Insecticidal Effects of Chitinase from Ipomoea Batatas on Developing Aedes Aegypti at Larval and Pupal Stages
BC16	Proteomics Analysis of HSP90 Regulation in Butyrate Treated Human Colon Cancer Cells(HCT-116)
BS03	Filmic representation of women's social status in mainland China before and after 1949
BS04	Designing a User-Centered and Interactive History Portal for Primary School Children
CB03	Role of Pin1 in Oxidative Stress-Induced Apoptosis
CB15	Are all cows the same?
CB17	The Effects of Morinda Citrifolia juice on human breast cancer cell line, MCF-7
CB31	The design of peptide aptamers with improved binding to eIF4E
CB35	Purification and Structural Characterization of the 16S rRNA Methyltransferase RsmC Expressed in Escherichia coli
CB41	Analysis of a phosphomimetic mutant of CDC3 in Candida Albicans
CB47	Genetic and Molecular Identification of a Novel Gene Required for Cytokinesis in the Fruit Fly Drosophila melanogaster
EB01	Synthesis of Semiconductor Nanowires by MOCVDs
EB17	Synthesis of Hyaluronic acid-Tyramine Hydrogel and a Study of its Degradation and Protein Release
EB22	Development of Ca ²⁺ Selective Sensor with Nanomaterials
EB33	Determination of Phase Lag between Trunk Movement and Backpack Movement on Gait and Body Posture with addition of Shock-Absorbent Backpack Straps
EB37	Glutaraldehyde & Oxo-lactose: Cross-linking Gelatin Microspheres for Hep3B Culture Systems
EB44	Study of Passivation Layer on High Electron Mobility Ge Substrate for The Nanoelectronic Devices
EB60	Stability of Self-Assembled Monolayer Based Nucleic Acid Biosensor
EE07	Experimental Investigation and Computer Simulation of Wheelchair Cushions
EE08	μ -Pore Membranes with Self-Contained Buffer for Bio-Filtration
EE17	Novel Miniaturized, Singlemode, and Zero-birefringence Silicon Ring Resonator

EE38	Development of Infused-Ceramic Material for Blast and Ballistic Impact Barriers
ET04	Hydrogen Desorption Studies over NaBH ₄ -LiNH ₂ and KBH ₄ -LiNH ₂ hydrogen storage systems
MH15	Investigating the Role of Heparanase Activity During In-vitro Osteoblast Proliferation and Differentiation
MS02	A New 3-Dimensional Model for the Periodic Table of Codons
MS03	Shi Doku, a Variant of Sudoku
PA05	3D Imaging Using Computer LCD screens
PS02	Cryopreservation of Orchid Seeds and Protocorms
PS08	A study of the presence and quantity of cadmium in selected vegetables and the effectiveness of various removal methods

Intel ISEF 2007

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
Amelia Chang Nong Shin Raffles Junior College	First Award in the category of Medicine and Health Sciences	Development of a Novel Approach for Applications in Preimplantation Genetic Diagnosis of Duchenne Muscular Dystrophy
Sewa Du Ying and Navin Brian Ramakrishna National Junior College	Second Award in the category of Cellular and Molecular Biology	Cdc42 Binding to IRSp53 Induces Filopodia Formation and Causes Localization of IRSp53 to the Leading Edge of Motile Cells

SSEF Award Winners 2006

SSEF 2006 Gold Award

Project ID	Title
BC19	Generation of Stable Overexpression of Aurora A, a Cell Cycle Kinase, in a MCF10A Cell Line
BC21	Effects of Overexpressing PAK and RhoAN19 on Neurite Outgrowth Pathfinding
BO01	Creating Post-Translational Switches From Various Steroid Receptors
BS04	The Bijani Conjoined Twins Separation Operation: An Ethical Study of issues regarding Quality-of-Life and Free Choice
EG49	High Speed Size-exclusion Chromatography Using Spherical Meso-structured Cellular Foam
ES02	Prediction of Tsunamigenesis through Seismic Signals of Earthquakes
MB05	Modulation of quorum sensing in Pseudomonas aeruginosa
PH04	Mitochondrial Movement Responses to local Mechanical Forces
PH26	Conceptualization and Construction of Table-top X-pinch Device for X-ray Imaging
SS01	Study Of Extrasolar Planets By Observing Eclipsing Binaries

**Results are not in any particular order*

SSEF 2006 Silver Award

Project ID	Title
BC18	Identification and characterisation of liver-enriched genes in the female zebrafish
BC24	Immunostaining of Mice Testis Tissues: Evidence for the Presence of a CD38-homolog
BC25	BCH or SEC14? Classification and characterisation of BCH/Sec14 Domains and Prediction of Novel Protein Interactions
BC36	Transient expression of mutant and wild type forms of alpha-synuclein in two different cell lines affects cell viability
BO17	Amount of Alkaloids present in budding potatoes and its application
CH27	Synthesis of Hierarchically Ordered Meso/macro Silica using the Dual Templating Method
CH36	Development of Magnetite- core Magnetic Microgels for affinity purification of Trypsin
CS03	Privacy Preserving Analysis on Social Networks of Physical Interactions
EG41	Design and Construction of a Dual Rail Electro-Magnetic Acceleration System
EG48	Characterization of Nafion Degradation in Proton Exchange Membrane Fuel Cells
EV01	Investigating the Adsorption of Heavy Metal Ions by Plant Fibre
MA03	List T-coloring of graphs
MB15	Isolation of Bacillus Strains and the Applications of their Enzymes in Waste Management

MH20	Quantitative Fluorescence - Polymerase Chain Reaction of Amniotic Fluid Cells for Prenatal Diagnosis of Chromosomal Aneuploidies
PH15	To develop an instrument to test shuttle cocks in badminton
PH28	Investigation Of Cancer Cell Migration And Deformation Using A BioMEMS Device
PH37	Investigating the properties of YBa2Cu3O7 superconductors on the micro/nano- scale
ZL02	Modelling and Fusion of Animal Sensory Systems of Vision and Echolocation for Target Tracking

**Results are not in any particular order*

SSEF 2006 Bronze Award

Project ID	Title
BC03	Role of c-Abl in ATM and ATR mediated DNA damage response
BC15	The Biomedical Potential of Marine Soft Coral in Singapore
BC27	Search for Novel Cytoplasmic Interacting Proteins of Voltage-Gated Cav1.2 Channels in Muscle
BC28	Biochemical and Structural Characterisation of the Prolyl Isomerase hPin1
BC33	Cloning and expression of Dengue Virus Capsid and Membrane proteins
BO11	Effects of pre-treatment to Cryopreservation of Dendrobuim Crumenatum Protocorms
CH18	Synthesis and characterisation of Photo-luminescent (PL) Functionalised nanocomposite
EG05	Creation of a programmable and extensible radio network
EG21	Investigation on the Performance of a Pneumatic Accelerator
MA04	Approximation and Mathematical Induction in Ellipses
MH03	Development of a novel antiicrobial alginate wound dressing
MH06	Analysis and Validation of Traditional Chinese Medicine herbs and recipes
MH12	Investigation into utilising visible light for the diagnosis of incipient enamel caries
MH22	Analysis of the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) Gene Q1532H Mutation in Chinese and Malay patients with Chronic Pulmonary Disease
PH01	Self-assembly of cell membrane mimics on gold electrodes under electrochemical control
PH11	Laser Scanning Confocal Microscopy of Charged Particle Tracks in CR-39
PH40	Narrow-Beam Ultrasonic Rangefinder using a Reflector
PH41	Optimisation of a Miniature Plasma Focus device
PH42	Insole design based on dynamic foot pressure distribution and ground reaction forces

**Results are not in any particular order*

SSEF 2006 Merit Award

Project ID	Title
BC06	Microbial Fuel Cell: The Biological Battery Investigating the design parameters of a microbial fuel cell
BO07	Circadian Clock and Photoperiodism: Comprehensive Analysis of Variation in Night Lengths in Photoperiodic Control of Flowering Time in <i>Portulaca Grandiflora</i>
BO14	Post- pollination petal and sepal greening in <i>Phalaenopsis violacea</i>
CH11	FT-IR based Quantitative and qualitative analysis of synthetic and Botanical materials
CH12	A study of High-k Dielectric material for the Nanoelectronic devices
CH15	Detection of west Nile virus using electrochemical biosensors
CH20	A Study of Energy Transfer between Binary Conjugated Polymeric Systems
CH26	Characterisation of Sputter-deposited Thin films for Micro/Nano Systems
CH31	Nano-crystalline of $\text{La}(\text{Fe})\text{O}_3$ prepared by hydrothermal-microwave method and its application in catalysis
CH32	Sodium decyl sulfate (SDeS) -aided immobilization and controlled release of camptothecin from agarose hydrogel
CS05	Multi-Sensor Diagnostics and Specimen Validation in Clinical Laboratories
CS13	Simulation of Ant Trails with Mathematica
EG02	Modeling / Investigating Mechanical Properties & Clay Delamination in Epoxy-Clay Nanocomposites
EG25	Carbon Nanotubes - an ideal material for nanoelectronic devices
EG40	The Impact of Ordinal on Response Surface Methodology
EG44	Virtual Laboratory of Water Recycle
EV05	Methods of reducing Nitrate and phosphate
MA01	North Finding from Star Observation
MB03	"Lipstick" or "lipsick"
MB14	The isolation of oral streptococci and the inhibition of growth and adherence to the tooth surface
MH11	Discovery and simulation of gene networks involved in epithelial-mesenchymal transition (EMT) during cancer metastasis
MH21	Effects of Phytochemicals on Skin Repair
PH02	X-Pinch Using Plasma Focus Device
PH06	Secondary Ion Mass Spectrometry of Contacts on Semiconductors
PH08	Patterned Polymer Films by Direct Focused Laser Beams
PH13	Fiber Bragg Grating Sensors for sensing and measuring applications
PH17	Fabrication and Characterization of high aspect ratio sub-micron silicon micro-filter structures for bio micro fluidic devices

PH22	Fluid Viscosity in tight channels - A view from Colloidal Micro Spheres
PH25	How Metallic Materials are made stronger
ZL06	The climbing perch, <i>Anabas testudineus</i> , is capable of active transport of NH ₄ ⁺ against a concentration gradient

**Results are not in any particular order*

Intel ISEF 2006

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
Sarah Ong Raffles JC	4th Award for the category of Engineering	High Speed Size-exclusion Chromatography Using Spherical Meso-structured Cellular Foam
Wong Kuan Yee and Wong Siew Han National JC	3rd Award for Team Projects	Modulation of Quorum Sensing in <i>Pseudomonas Aeruginosa</i>

SSEF Award Winners 2005

SSEF 2005 Gold Award

Project ID	Title
BC07	Isolation and Characterisation of ADP-riboseyl cyclase in Freshwater Organisms
BC25	Analysis of the Effect of P21 Activated Kinases on Differentiated NIE-115 Cells
BC32	Stimuli-responsive Fullerene-grafted polymers for Enhanced Drug Delivery Applications
BC36	Novel Injectable Hyaluronic Acid-Phenol Hydrogels formed by Enzyme for Drug Delivery/Tissue Engineering
CH21	Isolation, Characterization of Beta-Chitin from Squid Pens and Calcium Carbonate Crystallization on the Chitin Scaffold
CS04	Solving the 0-1 Multidimensional Knapsack Problem using TabuSearch and Visualization
EG16	Design and Characterisation of a Littrow Configuration External Cavity Diode Laser
EG55	Trajectories of Badminton Shuttlecocks
MH12	Fe-Au core-shell Nanoparticles for Magnetic Cell Separation
MH18	In vitro study of the Inhibiting Effect of Er: Yag laser on Enamel Demineralisation in Adverse pH Condition
PH05	A Study on Improving Efficiencies of the Pulsed Electromagnetic Linear Accelerator

**Results are not in any particular order*

SSEF 2005 Silver Award

Project ID	Title
BC06	Investigation of Role of the Catalytic Core Of The 10-23 And 8-17 Dnazyme in the Efficiency of Catalysis of RNA Substrates
BC38	Efficacy of Tissue Engineering Scaffolds of Varied Forms
CH17	Photophysical Studies of Conjugated Polymers
CH19	Synthesis of Self-Assembly of Transition Metal Oxide Nanoparticles via Soft Template Wet Chemical Route
EG29	Resolution Enhancement by Modulation of Lens Aperture in Shack-Hartmann Wavefront Sensor
EG57	Ionic Polymer - IPMC for Surgical Applications
MA05	Number of Monic Irreducible Polynomials over Z_p
MB06	Interspecies Bacterial cell-to-cell Communication and Quorum Quenching
MB21	Replacement of Insulin in Cell Culture Media with Zinc
MH27	The Protective effects of Caroverine on Cisplatin-induced hearing loss
MH41	Antibacterial and Anti-Tumor Activities of Fruit Peels

PH03	Investigation on Resolution of Electron Beam Lithography in the Fabrication of Submicron Aluminium Interconnects
PH20	A Novel Approach to the Fabrication of Tungsten Oxide Nanowires
PH33	Protein Crystallisation and Aggregation
PH39	Measurement and Analysis of Solar Spectrum
SS03	Cosmic Inflation
ZL09	Effects of Traditional Chinese Herbs on Embryonic Development in Zebrafish

**Results are not in any particular order*

SSEF 2005 Bronze Award

Project ID	Title
BC05	Preliminary Study of AMPA-mediated Neuronal Apoptosis in Murine Ischemic Model using Culture Cortical Neurons
BO07	Allelopathic Effects of Various Plant Extracts on Germination and Seedling Growth
CS09	Modeling and Simulation of Aerobic and Anoxic Digestion Processes of Wastes Treatment Using Activated Sludge Method(MatLab)
EG06	Performance Evaluation of Reverse Osmosis (RO) Membrane
EG07	Development of a Position and Velocity Dependent Friction Model
EG27	The Study of Human Constraint Motion Using a Rehabilitative Robot
EG58	Study of Gas Permeation Properties of Barrier Substrates and OLED Package Structures
EG59	Optimising Semiconductor Laser Structure
EG60	Pedestrian Trip Distribution Pattern and How it compares to the Boltzmann Distribution
EV16	A Baseline Study for Gunung Bintan
MA08	Binary Quadratic Forms Satisfying $X^3 + Y^3 = Z^3 + W^3$
MA11	De Bruijn Sequences
MA12	The Gambler's Ruin Problem
MB01	Spatial Localization of CDC3 Septin in Candida Albicans
MB03	Cloning and Expression of NSP1 SARS coronavirus
MH09	Anti-Cancer Properties of Rainbow Food
MH29	The Study of NAD(P)H: Quinone Oxidoreductase (NQO1) and Glutathione S-transferase (GST) in Childhood Acute Lymphoblastic Leukaemia (ALL)
MH32	Development of a Sensitive Assay to detect IL-6 Production in Multiple Myeloma Cell Lines
MH39	Protein Regulation in the Apoptosis Pathway
PH06	Energy Profile of Electron Beam Emission from a Dense Plasma Focus Device
PH11	Mechanical Properties of Starch

**Results are not in any particular order*

SSEF 2005 Merit Award

Project ID	Title
BC04	Identification and Characterization of a Novel Mutant type of Zebrafish deficient in T-cell
BC19	Over-Expression of Molecular Chaperones in CHO Cells for Improved Culture Viability
BC23	Extraction of Lipases from Aqueous Solutions into Organic Solvents by Phase Transfer Methods
BO01	A Cytogenetic Study of the Fertility and Breeding Potential of Four Local Orchid Hybrids
BS01	Role of Visual Images in Advertising: A Case Study of Social Advertisements in Singapore
BS09	Screen Griot: The Art and Imagination of Djibril Diop Mambety
CS11	Wireless Mobility
EG19	Design and Optimisation of an Underwater Propulsion Device
EG35	Synthesis of Materials with Ferroelectric and Magnetic Properties
EG48	Engineering Properties of Singapore Soils
EG49	Biomedical Evaluation of Decellularised Tissue Scaffold
EG61	A Nano-structure Development using Chemical Mechanical Polishing
MA06	Modeling the Birth Rate in Singapore
MA09	Time Series Modelling of the Straits Times Index
MB11	Genes Conferring Antibiotics (Ampicillin) Resistance in Pathogen <i>Aeromonas hydrophila</i>
MH06	Effects of Electromagnetic Radiation on Zebrafish and <i>Escherichia coli</i>
PH30	Soft X-ray Imaging using a neon filled plasma focus X-ray source
ZL05	Importance and Mechanism of Interleukin-6 In Hepatocyte Function

**Results are not in any particular order*

Intel ISEF 2005

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
YouJia Zhong Raffles Junior College	Second Award in the category of Chemistry	Isolation, Characterization of Beta-Chitin from Squid Pens and Calcium Carbonate Crystallization on the Chitin Scaffold
Wenxian Hong Raffles Junior College	Third Award in the category of Engineering	Design and Characterization of a Littrow Configuration External Cavity Diode Laser

SSEF Award Winners 2004

Gold Award

Name	Beh Yee Ming Leslie (Raffles Junior College)
Project Title	[Project ID: MB 01] A Novel Approach Of Gene Knockdown In Zebrafish Through Targeted mRNA Cleavage
Category	Microbiology
Abstract	-

Gold Award

Name	Li Zhipeng, Cong Lin, Wang Huajia (Hwa Chong Junior College, Hwa Chong Junior College, Hwa Chong Junior College)
Project Title	[Project ID: M 01] Discussions On Benford's Law And Its Application
Category	Maths
Abstract	-

Gold Award

Name	Ong Chin Siang (Raffles Junior College)
Project Title	[Project ID: CS 05] Drug Discovery By Machine Learning Method
Category	Computer Science
Abstract	-

Gold Award

Name	Lau Ting Ting, Ong Li Bing, Tan Hui Fang (Victoria Junior College, Victoria Junior College, Victoria Junior College)
Project Title	[Project ID: MH 12] The Antioxidant Potential And Immunomodulating Activity Of Dragon Plant
Category	Medicine and Health
Abstract	-

Gold Award

Name	Ho Ming Li Joanne (Raffles Junior College)
Project Title	[Project ID: BC 19] Proliferation And Differentiation Of Adult Rat Bone Marrow Stem Cells Co-cultured With Rat Hepatocytes
Category	Biochemistry
Abstract	-

Gold Award

Name	Du Shu Jun Juliet, Lee Yen Nee,Liu Yan Chen (Nan Hua Sec Sch, Nan Hua Sec Sch, Nan Hua Sec Sch)
Project Title	[Project ID: BC 25] Finding Out If Ti Alloy Coated With HA Is Biocompatible With The Human Body Fluid
Category	Biochemistry
Abstract	-
Gold Award	
Name	Wong Lee Ting (National Junior College)
Project Title	[Project ID: Z 06] Investigation Of The Function Of The Gene KEAP1 In The Embryonic Development Of Zebrafish
Category	Zoology
Abstract	-
Gold Award	
Name	Sim Jian Wei, Ong Jian Hua, Tan Wei Ming (Victoria Junior College, Victoria Junior College, Victoria Junior College)
Project Title	[Project ID: Z 03] Does The Extract From The Leaves of Azadirachta Indica (Neem Tree) Have Any Effects On Tenebrio Molitors (Mealworms)?
Category	Zoology
Abstract	-
Gold Award	
Name	Joseph Firmansyah (Raffles Junior College)
Project Title	[Project ID: CS 10] Augmentation Of Precision And Run -Time In ProtDex2-Rapid 3D Protein Structure Database Searching
Category	Computer Science
Abstract	-
Gold Award	
Name	Ang Lien Yvonne (Hwa Chong Junior College)
Project Title	[Project ID: MH 01] A Survey of Community Pharmacists On The Provision Of Professional Advice To Consumers Who Seek Self-Medication For Minor Ailment Management
Category	Medicine and Health
Abstract	-
Gold Award	
Name	Chong Hui Ling Grace,Chor Xue Ting,Loo Moh Guan Jackson (Victoria Junior College,Victoria Junior College,Victoria Junior College)

Project Title	[Project ID: B 08] Investigation On The Effects Of Natural Additives On Growth Of Cauliflower Explants
Category	Botany
Abstract	-

Award Winners (Silver)

Silver Award

Name	Chong Mui Fong, Sim Wen Hui (Victoria Junior College)
Project Title	[Project ID: BC 03] Bad Milk Indicators
Category	Biochemistry
Abstract	-

Silver Award

Name	Cassandra Seah Hui Xian, Pey Peixuan, Lua Hui Ling (Victoria Junior College)
Project Title	[Project ID: BC 06] Chitosan: The Next Big Thing In Hair Treatment ?
Category	Biochemistry
Abstract	-

Silver Award

Name	Isobel Tan Wen Li,U Yasmeen (National Junior College)
Project Title	[Project ID: BC 13] Investigating The Effects Of The RhoBTB2 Protein On The Cytoskeleton And Its Cellular Localisation Via Over-Expression Of Protein And Development Of Antibodies
Category	Biochemistry
Abstract	-

Silver Award

Name	Tan Jin Ling Lynn,Ng Zhi Hao Joel (Hwa Chong Junior College)
Project Title	[Project ID: BS 01] Copyright Violations And Piracy In The Software Industry And The Case Of Singapore
Category	Behavioural and Social Sciences
Abstract	-

Silver Award

Name	Tan Yan Shuo, Yong Jin, Ho Wen Wei (Raffles Institution)
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Project Title	[Project ID: CS 01] A Study Of Traditional Chinese Medicine Herb Pairs Using A Support Vector Machine
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Category	Computer Science
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Abstract	-
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Silver Award

Name	Nguyen Thanh TungWilly Febrianto Kurniawan (Anglo-Chinese Junior College)
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Project Title	[Project ID: E 18] Growth Of Zinc Oxide Nano Particles From Controlled Solution Method
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Category	Engineering
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Abstract	-
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Silver Award

Name	Zhang ChiGuo Qing (Hwa Chong Junior College)
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Project Title	[Project ID: E 32] Synthesis And Characterisation Of Nanostructured Shape Memory Alloys
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Category	Engineering
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Abstract	-
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Silver Award

Name	Li Zhipeng (Hwa Chong Junior College)
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Project Title	[Project ID: E 35] The Growth And Characterization Of Multi-wall Carbon Nanotubes Produced By Catalytic decomposition of Carbon monoxide
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Category	Engineering
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Abstract	-
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Silver Award

Name	Liu Hongwan (Raffles Junior College)
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Project Title	[Project ID: E 36] Thermoelectric Auxiliary Power Supply For Gas-cooled Fast Reactor Decay Heat Removal
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Category	Engineering
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Abstract	-
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Silver Award

Name	Ong Hsien Yew Samuel (Hwa Chong Junior College)
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Project Title	[Project ID: ES 04] Ecotoxicity Of Some Common Pharmaceuticals On Marine Larvae
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Category	Environmental Sciences
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Abstract	-
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Silver Award

Name	Tham Lizhan, Yeng Hong Qing, Zhang Wenyu (The Chinese HighSchool)
Project Title	[Project ID: ES 07] Phytoremediation Using Common Grasses
Category	Environmental Sciences
Abstract	-

Silver Award

Name	Zhao Yan, Goh Shih Hsien (Raffles Institution)
Project Title	[Project ID: M 02] Investigation Of Pascal Triangle Mod 2^x
Category	Maths
Abstract	-

Silver Award

Name	Wang Siwei, Amy, Ong Shu Ren, Sarah (Raffles Girls' School)
Project Title	[Project ID: MB 04] MB 04 Effect of Handwashing On Bacterial Colony Count
Category	Microbiology
Abstract	-

Silver Award

Name	Tea Li Ming Isabella (Hwa Chong Junior College)
Project Title	[Project ID: MB 09] Studies On Developing a Transformation System With An Antitumour Compound-Producing-Actinomycete Strain, NC 4
Category	Microbiology
Abstract	-

Silver Award

Name	Xing Minzhi, Thevandiran s/o Kanavathy, Allen Fok Cheng Feng (Anglo-Chinese Junior College)
Project Title	[Project ID: MH 11] Synthesis And Characterisation Of N-Isopropylacrylamide Hydrogels for Biomedical Applications
Category	Medicine and Health
Abstract	-

Silver Award

Name	Lee Min Wai Serene (Raffles Junior College)
Project Title	[Project ID: P 02] Body Sway Technology - Studies On Data Correlations To Identify Elderly People Prone to Falling
Category	Physics

Abstract -

Award Winners (Bronze)

Bronze Award

Name Wang Shu Yang, Tang Yue Han (Raffles Junior College, Anglo Chinese Junior College)

Project Title [Project ID: BC 14]
Making Seawater "Cleaner" For Desalination-Fluoride And Boron Sequestration By Mangroves?

Category Biochemistry

Abstract -

Bronze Award

Name Lim Tse Yang (Raffles Junior College)

Project Title [Project ID: BC 20]
Protein-Protein Interaction Studies Of The DLC-1 SAM Domain

Category Biochemistry

Abstract -

Bronze Award

Name Chong Yong He (Raffles Junior College)

Project Title [Project ID: BC 21]
Replacement Of The α -3 Helix In Z α ADAR1 With Amino Acids From Z α DLM1 And SARS And Binding Of Chimera Proteins To Z-DNA

Category Biochemistry

Abstract -

Bronze Award

Name Liew Yi Jin (Hwa Chong Junior College)

Project Title [Project ID: BC 23] Splice Site Selection In The Dystrophin Gene

Category Biochemistry

Abstract -

Bronze Award

Name Sng Tiap Ching Matthew (Raffles Junior College)

Project Title [Project ID: BC 24]
The effects Of N-butyric Acid On The Differentiation Of MN9D Cells

Category Biochemistry

Abstract -

Bronze Award

Name	Sng Tiap Ching Matthew (Raffles Junior College)
Project Title	[Project ID: BS 02] Is Shininess A Basic Feature In Visual Search?
Category	Behavioural and Social Sciences
Abstract	-

Bronze Award

Name	Iwan Permana Djanali (Raffles Junior College)
Project Title	[Project ID: C 08] Conjugated Biphenylene-Acetylene-Phenylene System As Model For Organic Light Emitting Materials
Category	Chemistry
Abstract	-

Bronze Award

Name	Prem Ruben Jayaram (National Junior College)
Project Title	[Project ID: C 13] Fluorous Phase Labelling With Enzymatic Catalysis
Category	Chemistry
Abstract	-

Bronze Award

Name	Chen Zhengfeng (Hwa Chong Junior College)
Project Title	[Project ID: CS 08] Image Recognition On Facial Coordinates Using The Eigenfaces / Principal Component Analysis (PCA) Method
Category	Computer Science
Abstract	-

Bronze Award

Name	Chen Shuzhen Fiona,Lau Yong Fu Alfred,Goh Ming Hwee Gwendolyn(Victoria Junior College,Victoria Junior College,Tampines Junior College)
Project Title	[Project ID: E 05] Carpark Management System Prototype : FAB*Ginnopark
Category	Engineering
Abstract	-

Bronze Award

Name	Timothy Tan Guang Rong (Victoria Junior College)
Project Title	[Project ID: E 08] Close Range Positioning System Using Wireless Networks
Category	Engineering
Abstract	-

Bronze Award

Name	Lee Linus, Lee Silvanus (Raffles Junior College)
Project Title	[Project ID: E 11] Effects Of Temperature And Magnetic Field On The Growth Of Carbon Nanotubes
Category	Engineering
Abstract	-

Bronze Award

Name	Zhao Haobo (National Junior College)
Project Title	[Project ID: E 17] GaAs-based Thermal Bimorph Microactuator For MEMS
Category	Engineering
Abstract	-

Bronze Award

Name	Moses Wong Xian Neng, Lim Chien Kai (National Junior College)
Project Title	[Project ID: E 37] XPS Characterisation Of Oxide Dielectric Thin Films For Application in Nanoelectronics
Category	Engineering
Abstract	-

Bronze Award

Name	Ang Kaili, Elaine Lim su Han, Ang Hui Qian Iris (Serangoon Secondary School)
Project Title	[Project ID: ES 01] A Study Of The Effectiveness Of Various Items In Protecting Against Ultraviolet Radiation
Category	Environmental Sciences
Abstract	-

Bronze Award

Name	Poon Ling Qun, Deng Ziliang, Diyana Marina (North Vista Secondary School)
Project Title	[Project ID: ES 09] The Effect Of Different Freshness Of Oil To Manufacture Quality Soap On Removing Stains
Category	Environmental Sciences
Abstract	-

Bronze Award

Name	Keung Xi Zhen (Hwa Chong Junior College)
Project Title	[Project ID: MH 02] A Survey Of Consumers On The Provision Of Professional Advice Given By Community Pharmacists on Self-Medication

Category	Medicine and Health
Abstract	-
Bronze Award	
Name	Lim Yeok Loo, Agnes (Hwa Chong Junior College)
Project Title	[Project ID: MH 06] Identification Of Novel Endogenous Proteins For The Control Of Angiogenesis-Based On Bioinformatics Support
Category	Medicine and Health
Abstract	-
Bronze Award	
Name	Yeo See Hwee, Lim Kai Tun, Lee Hanjie (Victoria Junior College)
Project Title	[Project ID: MH 08] Investigation On The Toxicity Of Chinese Herbs On Mealworms
Category	Medicine and Health
Abstract	-
Bronze Award	
Name	Chin Hui Lin (Raffles Junior College)
Project Title	[Project ID: MH 09] Optimal Conditions For Factor VIII Gene Amplification In Point Mutation Screening For Hemophilia A
Category	Medicine and Health
Abstract	-
Bronze Award	
Name	Lim Shu Wen Diane (Hwa Chong Junior College)
Project Title	[Project ID: MH 14] Use of Long-Distance PCR To Detect An Intron-22 Inversion In The Factor VIII Gene
Category	Medicine and Health
Abstract	-
Bronze Award	
Name	Pua Yeong Heng (Hwa Chong Junior College)
Project Title	[Project ID: P 07] Horizon-Like Structures In Alcubierre Warp Drive Spacetime
Category	Physics
Abstract	-

Award Winners (Merit)

Merit Award

Name	Teo Wei Shan Gwenda, Tan Ai Lin, Lim Chong Ming (Anderson Secondary School)
Project Title	[Project ID: BC 08] Development Of DNA / PCR Based Diagnostic Kit For Detection Of Salmonella Pathogen In Food
Category	Biochemistry
Abstract	-

Merit Award

Name	Gan Teck Wang, Jerry Thia Yew Jia, Lau Hao Wen (River Valley High School)
Project Title	[Project ID: BC 12] Investigating Genetically Modified Organisms In Baby Foods
Category	Biochemistry
Abstract	-

Merit Award

Name	Sun Baoluo (Raffles Junior College)
Project Title	[Project ID: BC 16] Nuclear Reprogramming Of Somatic Cells - A Strategy to Understand The Molecular Mechanism
Category	Biochemistry
Abstract	-

Merit Award

Name	Lau Yao Loong Calvin (Raffles Junior College)
Project Title	[Project ID: BC 18] Polymer Scaffold Structure For Tissue Engineering
Category	Biochemistry
Abstract	-

Merit Award

Name	Sudipta Roy Chowdhury, Khairiyah Binte Kassim, Lysia Tilie Hartadi (Victoria Junior College)
Project Title	[Project ID: C 04] Analysis Of Tea Components By Capillary Electrophoresis And Total Antioxidant Potential Of Different Types Of Tea
Category	Chemistry
Abstract	-

Merit Award

Name	Christine Cheung, Lee Siang Liang (Raffles Junior College)
Project Title	[Project ID: E 07] Clinical Diagnosis Using Microfluidic Devices

Category	Engineering
Abstract	-
Merit Award	
Name	Loi Kok Yen Victor (National Junior College)
Project Title	[Project ID: E 13] Electromechanical Characterization Of Piezoelectric Thin Films With A Laser Scanning Vibrometer
Category	Engineering
Abstract	-
Merit Award	
Name	Liang Kaicheng, Vikas Reddy Enti Rangareddy (Raffles Junior College)
Project Title	[Project ID: E 15] Fabrication Of Organic Light Emitting Diodes On Glass Substrate
Category	Engineering
Abstract	-
Merit Award	
Name	Tay En Rong Stephen, Liu Yixin (National Junior College)
Project Title	[Project ID: E 21] Investigation Of Multilayer Heterostructure Using SIMS
Category	Engineering
Abstract	-
Merit Award	
Name	Aman Pratap (Temasek Junior College)
Project Title	[Project ID: E 29] Photonic Crystal Fibers And The Phenomenon Of Macrobending Losses
Category	Engineering
Abstract	-
Merit Award	
Name	Luo Yi Jia (Hwa Chong Junior College)
Project Title	[Project ID: E 31] Structure Health Monitoring Using Electrical Wave Signaling
Category	Engineering
Abstract	-
Merit Award	
Name	Low Wen Xi Aylwin, Lim Lip Kwang Ronald, Woo Yat Cheong John (The Chinese High School)

Project Title	[Project ID: MB 11] Transformation Of Yeast
Category	Microbiology
Abstract	-
Merit Award	
Name	Alvin Ling Jee Yee, Lim Zhi Yuan (Victoria Junior College)
Project Title	[Project ID: MH 04] Investigation On The Effect Of Traditional Chinese Herbs On The Activity Of Macrophages
Category	Medicine and Health
Abstract	-
Merit Award	
Name	Tan liangzheng (Raffles Junior College)
Project Title	[Project ID: P 01] Behavior Of Light At An Interface
Category	Physics
Abstract	-
Merit Award	
Name	Xiao Yuhong, Achal Agrawal, Chang Ci'En, Sharon (National Junior College)
Project Title	[Project ID: P 11] Nanomanipulation Using Focused Laser Beams In Air And Water
Category	Physics
Abstract	-
Merit Award	
Name	Lim Mei Chin, Shariffah Nadia (Victoria Junior College)
Project Title	[Project ID: Z 04] Effect Of The Different Types Of Antioxidants And Stimuli On The Aging Process And Reproduction On Caenorhabditis Elegans
Category	Zoology
Abstract	-
Merit Award	
Name	Leow Ming En Darren, Wat Zhiwen Sergius (Raffles Institution)
Project Title	[Project ID: Z 07] The Effects Of Web Removal On Web Relocation Of The Golden Web Spider Nephila Pilipes
Category	Zoology
Abstract	-

Intel ISEF 2004

Details of Projects Submitted By The Singapore Team

Students	Award	Project Description
Leslie Yee Ming Beh Raffles Junior College	Intel ISEF Best of Category Award of \$5,000 for Top First Place Winner, First Award of \$3,000 in category of Microbiology, First Award of \$1,000 and a certificate from American Intellectual Property Law Association	A Novel Approach of Gene Knockdown in Zebrafish Through Targeted mRNA Cleavage
Joanne Ming-Li Ho Raffles Junior College	Fourth Award of \$500 in category of Biochemistry,	Proliferation and Differentiation of Adult Rat Bone Marrow Stem Cells When Co-cultured with Rat Hepatocytes