10th ELEMENTZ SCIENCE RESEARCH CONFERENCE & EXHIBITION
Anderson Secondary School

Group A

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
A1	Anderson Secondary School	Fishing for nature's anti-aging ingredients based on antioxidant activity screening	Antioxidant levels of different types of fruits are measured using the fluorometric analysis method. Data obtained can help man make better choice in their fruit consumption	Chiu Chai Hao Yong Hui Min	Mdm Tey Chin Chin Mr Leow Teng hong	Bronze
A2	Bowen Secondary School	Nail Polish & Nail Polish Remover	The aim of the project is to find out the brand of nail polish remover that can best remove nail polish.	Tiong Shimin Kok Huan Yi Lee Si Hui Ong Li Yan Ong Jing Ning	Lim Soon Ben Derrick Kevin Lim	Bronze
A3	CHIJ St Joseph's Convent	Investigation of the Conversion of Oil into Biofuel	Our project is about converting used vegetable oil to biofuel. On top of that, we use off the shelf materials to carry out the conversion so that it is cheaper and more convenient for people to carry out.	Ng Jia Qi Nicole Hazel Hoo Hui Shi V Shakthi Pamela Tan JinHan Deborah Dominque Chan Rui Min	Mr Chris Chang Mr Fed Chong	COP
A4	CHIJ St Nicholas Girls' School	Investigations on The Effectiveness of Several Types of Facial Foam in the removal of oil and bacteria	4 popular brands of facial foam were selected to investigate their effectiveness in removing bacteria found on human's faces and oil. Also, to research and analyze the ideal ingredients needed for effective facial foam	Joven Liew Jia Wen Loh Yue Yan Amelia	Ms Anna Fu	Gold
A5	Christchurch Secondary School	Comparative study of carcinogens formed in food cooked by different methods	Different food substances (meat) will be subjected to different cooking conditions and the amounts of carcinogens formed will be determined by means of HPLC. Through this experiment, we hope to find the best way to cook food so as to cut down on the amount of carcinogen formed.	Lee Yeow Chung Xavier Sincharoenkul Siravich Gerald Lim En Yao	Miss R K Devi Mdm Giam Juat Ngoh	COC
A6	Compassvale Secondary School	Investigation of Different Types of Soils as Electrical Systems	In this experiment, we investigate how well different types of soils would conduct electricity. Different types of soil from different places will be collected as samples and tested for their electrical conductance.	See Tow Wei Hao Nicole Sim Simin Ili Atiqah Binte Asmandi Tan Xue Ting Supansa Wee Xin Yun	Tang Hui Boon Idamurni Binte Jamari	COC

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
A8	Fuchun Secondary School	Fruit enzymes fermentation	The project aims to investigate the enzymes that will be produced from certain kinds of fruits when these fruits are fermented. The enzymes screened are amylase, protease and urease.	Ernest Low Zhiwei Tan Zhi Hao Ho Zhuang Xian Lim Leh Woon Calvin Lawi	Mr Philemon Foo Tze Liang	Bronze
A9	Maris Stella High School	Development of an educational kit on Investigation of Plant Behaviours	To develop and optimise plant related experimental kits for Primary schools by looking into responses of plants to external stimulants such as colour of light, critical depth for growth and magnetic fields interferences.	Yuan Bo Zephaniah Wei Enxin Koh Cheng Han Edwin Kang Hwee Young	Prameeta Menon Amy	Silver
A10	Maris Stella High School	Determining the ideal conditions and types of fruit wastes for production of bioethanol	To determine the conditions that will affect the yield of biofuels through fermentation of various types of fruit wastes. The group will explore the types of treatments to the fruit wastes prior to fermentation and the ideal duration of incubation and temperature for a high yield.	Ding Hao Cai Ling Zhi Benjamin Aw Wei Long Bon Seah Jun Yi Zhang Ee Teng	Prameeta Menon Amy	Silver
A11	Presbyterian High School	To find out what is the chemical solution that can be used to induce germination of the Dendrobium orchid pollen	The project is to investigate how the sugar solution can be used to induce the germination of the orchid pollen. The incorporation of calcium nitrate is added to find out whether it will enhance the percentage of germination of the orchid pollen.	Samantha Tan Yan Lin Eng Shi Ming Tay Chu Yi	Mrs Choy Hui Peng	COP
A12	Serangoon Secondary School	Changes in the vitamin C level in fruits when stored in the fridge	The project will investigate the drop in the Vitamin C level in fruits over time when stored in the fridge and also in the open.	Chua Miao Ling Jolene NurHazmeera Bte Hudari Nur Azirah Bte Azlan Zarifah Bte Md Zackaria	Mdm Lu Yen Ling Mr Ng Soon Aik Mdm Low Tin Yan	COC
A13	Si Ling Secondary School	Extraction of chemicals from Dead Sea	To search for suitable methods of extraction of the chemicals present in the Dead Sea	Pan Chen En Bryan Lim Qing Yu	Mr Khoo Cheng	COP
A14	Yishun Town Sec. School	Alternate fuel source	Our 3 stage research involves investigating the best food that produces the most amount of methane as an alternative fuel, its effectivity, cost and relevance to real life.	Afiq Danial Sham Melvyn Koh Nguan Theng Nijel Hong Nathaniel Fetavero Theodore Emmanuel Choo	Ms Theresa Koh Mr Zuriel Zhuo	Gold

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
A15	Team from China	Investigation and Exploration of the Treatment of “Three Wastes” at Three Circles Chemical Co, Ltd	Yunnan Three Circles Chemical Co Ltd is one of China’s large scale phosphate compound fertilizer producers. From our project, a conclusion can be drawn: on one hand, the company’s control and management of “three wastes” can be a worthwhile reference for other enterprises; on the other hand, it still needs improvement in some aspects	Xue Fengnishan Lan Xue Rui Jingjing Zhu Junming Liu Zhihui	Wei Qiguang	COC

Group B

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
B2	Bowen Secondary School	Avalanche	A board will be tilted at an angle and flour will be placed onto this board. A sound source wil be used to create sound of different pitches to determine the resonant frequency of flour that will cause the flour to create an avalanche.	James Tan Chia You Hong Ros Amirah Rosli Phoon Sze Yan Lim Jia Xiang	Lim Soon Ben Derrick Kevin Lim	Bronze
B3	CHIJ St Joseph’s Convent	Producing ethanol using orange peels through acid hydrolysis and fermentation of glucose	Ethanol is a type of biofuel that can be produced from biomass. Hence, our group attempted to convert fruit skim into ethanol through acid hydrolysis.	Tan Mei Zheng Toh Chun Hui Dionis Lim Si Ying Elysia Tan Yee Ru	Mrs Ng Peck Hoon Mr Fed Chong	Bronze
B4	CHIJ St Nicholas Girls’ School	To investigate which type of milk associated products is most suitable to make biodegradable plastics.	Four different types of milk associated products were selected to investigate which is suitable for making durable and useful biodegradable plastics. Hence, save the environment. .	Lau Si Xian Tan Yu Jia Liu Zhu Tuo tuo Ning Yin	Mrs Tan Siew Kim	Bronze
B5	Christchurch Secondary School	Comparative study of ‘mock’ meat and ‘real’ meat	The protein and fat content of three types of mock meat will be determined and compared with the real meat.	Daniel Chew Zi En Praashant Kasavan Ong Pui Yuan Desmond Kwar Peng Sim Ong Yuh Dar	Miss Lee Tingyi	COC
B6	Compassvale Secondary School	Fret Not Rain” - Mr Hanger	Attention to people, fret not about hanging your clothes out to dry even during rainy days because Mr Hanger is here to help! Be it housewives or husbands, forgetting to collect their clothes will not be a problem on rainy days anymore.	Ng Baoyi Shiang Yi Lin Esther Lee Ivan Tan	Chua Lihong Ahamed Shah Syed Ibrahim	Gold

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
B7	Evergreen Secondary School	An investigation of the feasibility of an organic substitute to plastic	Investigate the feasibility of using organic biodegradable materials as an alternative to plastic through testing of its tensile stress.	Chong Hui Shi Chua Deng Ji Chua An Qi Angelia Sammuel Wi jianwei	Tseng Jih Cheng	COC
B8	Fuchun Secondary School	Determination of ascorbic acid content in bell pepper (Capsicum anuum)	In this project, the ascorbic acid (Vitamin C) content of bell pepper (Capsicum anuum) was studied and the potential development of a potent antioxidant extract was discussed	Joey Chong Chooi Yee Aw Xue Ting Lee She Nee Anushka Balaskanda Md. Faris b Md Rasid	Mr Antony Raj	COC
B9	Maris Stella High School	Synergistic and antagonistic properties of common beverages against ampicillin	To investigate the effects of common beverages on ampicillin during ingestion. The difference in pH of the beverages might contribute to the stability of the antibiotic. The group hopes to bring awareness to the general public on the consequences of taking inappropriate beverages with their antibiotic.	Huang Pei De Jerer Lim Guan Hong Qian Qi Hui Yang Shi Chen Abraham Soong	Prameeta Menon Amy	Silver
B10	Marsiling Secondary School	Incandescent versus Fluorescent Light bulbs	To compare the efficiency and environmentally friendliness of fluorescent versus incandescent light bulb.	Jacky Tjoeng Zi Ying Ang He Lin Xu Tian Yong Muhammad Nazeer B Jelani Iznie Nadira Bte Roslee	Ms Baey Ee-Lyn	COP
B11	Presbyterian High School	To investigate the Effect of Background Sound on Sleeping Patterns on human	The project is to find out whether the background noise affects the sleeping pattern of people. The group members will approach 30 volunteers to investigate how the two different type of background sound improve the sleep pattern of the volunteers.	Lew Shu Yuan Regina Lim Cheng Xue Ying Leong Suli Yolande Quah Shu En Abigail	Mrs Choy Hui Peng	COC
B12	Serangoon Secondary School	An investigation on the effectiveness of using a cotton cloth filter in removing bacteria and ferrous compounds from tap water	The project investigates on the effectiveness on the simple water filter system (with a white cotton cloth pocket wrapped around the mouth of the tap) in removing bacteria and inorganic compound in tap water.	Nurul Athirah Bte Rosmani Liang Kelly Tan May Chin	Ms Fu Shin Hui Mdm Tan Bee Yong	Gold
B13	Si Ling Secondary School	Effect of the rate of cooling on the crystals formed	To investigate the effect of the rate of cooling on the size of crystals formed	Chin Peijia Nursyahirah Bte Abdul Rasek Ryu Jung Eun Salomi Deborah Williams Zeng Wenqiu	Mr Khoo Cheng	COP

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
B14	Yishun Town Secondary School	"Microbe Killers"- To investigate the anti-microbial effects of plant extracts on bacteria on meat.	Goal: To find simple and cost effective ways of reducing the amount of bacteria on meat that are consumed without having them being completely cooked, using the spread-plate method. .	Amanda Chang Jing Yi Yau Gee Lam Muhammad Alif bin Affendi Muhammad Hadi Neoh Tse Pin	Ms Pou Li Min	Silver
B15	Team from China	Improvement in Micrographic Experiment of Tiny Deformation	Improvement in Micrographic Experiment of Tiny Deformation	Liu Wenyun Zhangzhu Xingzhu Wang Xin Chen Tianyu Wei Qingyu	Zhu Shuguang Wang Yuanjun	COC

Group C

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
C1	Anderson Secondary School	Putting rice husk ash to good use	To determine the effectiveness of removing metallic ions in solutions using rice husk ash	Haiysvariyah d/o T Haritha Muralidharan Raveendran Aswini	Mr Leow Teng Hong Genecet	Gold
C2	Bowen Secondary School	Investigating the nutrient content and pH of soft drinks and their effects on bones	The objective of this project is to investigate the nutrient content and pH in soft drinks and to find out their effects on bones so as to recommend a suitable weekly intake of soft drinks for teenagers.	Dawn Tan Voon Xin Chew Mei Xuan Finn Goh Qian Hui Tan Jing Yi Htet Myoo Oo Peter	Lim Pei Ping Dorothy Chong Huilin Melissa	Chew Mei Xuan Tan Jing Yi Htet Myoo Oo Peter
C3	CHIJ St Joseph's Convent	Investigation of Tea Leaves as an alternative Fuel	We did an experiment by burning tea leaves and observing how long it took to boil water. We also found out which type of tea leaf is the best fuel among the chosen types of tea leaves	Chan Hui Bin Yvonne Ng You Pin Lynda Lee Yi Nan Lee Dai Ling Chin Qiao Fang	Mrs Ng Peck Hoon Mr Fed Chong	Bronze
C4	CHIJ St Nicholas Girls' School	Removing oil pollutants by discarded natural materials	Used, discarded organic materials like sawdust, orange rinds, egg shells, peanut husks and dried chrysanthemum leaves were selected to investigate which can absorb oil best from surfaces efficiently.	Alicia Wang Xin Chan Serene Lau Sze Leng Lim Hsin Yi Caryl Na Min Qi Brander	Mr Teoh Chin Chye Alex Mrs Hoo Boon Leng	Silver
C5	Christchurch Secondary School	Comparative study of fresh soya extracts versus the processed soya products	Comparative study of fresh soya versus the processed soya products	Rebecca Tan Josephine Tiew Hui Ting Julette Tay Shu Wen Yap Sin Mei Abigail Ng Teck Soon	Miss R K Devi Mdm Giam Juat Ngoh	Gold

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
C6	Compassvale Secondary school	Designing an Anti-Mosquito Breeding Device	The project aims to design a device that prevents the breeding of mosquitoes through preventing and eliminating of the various mosquito breeding grounds	Yam Shi Lee Brandon Koh Alcina Teo Low Xin Ying	Ng JunJie Ng Hong Pin	Bronze
C7	Evergreen Secondary School	The anti bacterial effect of tea	The project investigates whether there is a change in anti-bacterial effect of tea as it is left to cool.	Khairul Syazwan B Sahak Tham Cu Er Teo Jin Tian Valerie Sng Xue Ting Muhamad Shakir Bte Mohd Anuar	Mrs Sarah Tan	COC
C8	Fuchun Secondary School	The sweeter the better: sweeter grapes produce more ethanol?	The project aims to investigate which type of grapes, when fermented, would produce the most amount of ethanol. The process of investigation utilizes Benedict's solution test, UV-spectroscopy and titration method	Md Nasrullah Jarlani Clave Jethdanly Medina Julaina bte Jaafar Lily Suriani bte Hosni Nur Afiqah bte Amran	Ms Esther Seto	COC
C9	Maris Stella High School	Investigation of Lactobacillus acidophilus, Lactobacillus bulgaricus, Lactobacillus casei and their survival ability in human alimentary canal	The aim of this project is to find out if these Lactobacillus species are able to survive the extreme conditions through the human digestive system in order to play an important role in the health of the individual.	Zhang Wencong Choo Xian En Micheal James Randolph Onggo Ren Jia Hui Vincentius Edward Lie	Prameeta Menon Amy	Silver
C10	Marsiling Secondary School	Causes and effects of global warming	To investigate the causes and effects of global warming with respect to: 1. greenhouse effect 2. carbon dioxide emissions 3. the effect on the water level when floating ice bergs and land ice melt.	Nurul Aishah Nabila Bte M L Nur'Amalina Bte Hairi Nurul Shafiqah Mohamed Khairul B Fazal Rahman	Ms Yap Ching Ying	COC
C11	Montfort Secondary School	Gas Pressure	Is it possible to harness energy from moving lifts to generate electricity? We attempt to build a prototype to answer this question	Lim Chu Rui Ng Han Inn Anthony Tan Hee Boon Tristan Chan Yew Kit Chen Yi Song	Ms Gwenda Goh Mr Tan Geok Hean	COC
C12	Presbyterian High School	To investigate the best solution in removing the hair dye	The project is to investigate the best solution in removing the hair dye. They will obtain the real hair from the hair saloon and apply the equal amount of hair dye on it. The dyed hair will be soaked into different solutions for a same period of time. We will then compare the colour of the hair to check for the effectiveness of each solution in removing the dye.	Juliana Seng Mei Feng Wong Jia Wei Chua Bryan Nicholas Vincent Tok Qing Peng Wynne Lim Wenyi	Mrs Choy Hui Peng Ms Chua Guat Beng	COC

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C14	Si Ling Secondary School	'crying effect' of onion	To investigate the factors that affects the 'crying effect' of onion	Nur Fitria Syakirah Bte Rahmat Firda Fatasya Bte Saleh Nur Nabilah Bte Shaifuddin Nursaliza Bte Usman Nurul Amirah Bte Mohamad	Mr Khoo Cheng	COC
C15	Yishun Town Sec.ondary School	To investigate the effectiveness of the different SPF values in sunscreen lotions in providing UV protection for the skin	Our aim is to investigate that sunscreen with higher SPF values will be more effective in screening off harmful UV rays so as to benefit people who are constantly exposed to sunrays due to outdoor activities. .	Lee Wen Hui Jorene Genevieve Lim Wei Ting Lau Boon Yee Chan Teck Soon	Mrs Amanda Tan	COC

Group D

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
D2	CHIJ St Joseph's Convent	Clear water in minutes	To create a simple to make water filter with materials that can be found in our daily lives that will allow less fortunate people to get pure water filter. The materials used are either recycled or easy to get. In addition, the water filter is also transportable.	Melissa Ho Xing Juan Jasmin Ang Shu Yi Bernadette Marie Low Rei Nakanishi	Mrs Cherry Lim Mr Fed Chong	COP
D3	CHIJ St Nicholas Girls' School	Investigating sugar levels in common fruits	Diabetic people have difficulty controlling their sugar intake while eating fruits. Hence, it is important that we find out the sugar levels in common fruits.	Loo Yu Ying Yvonne Oh Xin Hoon Daphne Tang Hui Yi Wong Leng Si Rachel Cabrini Tan Pei En	Mr Teoh Chin Chye Alex	COC
D4	Evergreen Secondary School	Using laser as a nonintrusive method of testing contaminants in water.	Contaminants in water bodies can be detected through the use of a collimated beam of laser light.	Ng Qi Xin Christine Ong Sing Ying Goh Bing Feng Lim Wei Jie Brandon Syed Noor Suhairi B Jafri	Mr Tan Lee Sze	Gold
D5	Fuchun Secondary School	The effect of microwave water on plants	Microwave water supposedly contains chemicals that may affect the condition of human health. This project aims to investigate the effects of microwave water on the growth of plants	Muhammad Muhaimin JBrien Cezar Barcoma Mervyn Pee Ze Ren Md Nur Shah bin Anwar	Mr Soh Jia Sheng	COP
D6	Maris Stella High School	Investigating the effectiveness of orange peels in making paper.	The team's main purpose was to find an efficient and environmentally friendly method of producing paper-like material out of orange peels.	Chia Rui Xiang Keith Sie Yin Lead Wong Zhen Yang Soh Sheng Rong, Michael Tan Jee Chiok, Benedict	Prameeta Menon Amy	Silver

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
D7	Montfort Secondary School	Potato-milk Plastic	There are 2 possible ways to get biodegradable plastics: using milk and using starch. Is it possible to combine the benefits of these 2 types of plastic to create a usable plastic that has greater strength?	Issac Heng Zhi Ying Javihn Tay Aaron Gabriel Ee Gabriel Kwek	Mrs Jaime Tan	Bronze
D8	Orchid Park Secondary School	Effect of Temperature on the concentration of caffeine present when making coffee.	Caffeine occurs naturally in coffee. In this experiment, coffee is made at different temperatures of water and the concentration of caffeine present at each temperature is measured.	Neo Sumin Nguyen Thi Bao Linh Clifton Cheong Cai Deshun Ashton Teh	Mr Goh Chye Joo	COC
D9	Presbyterian High School	Effect of spices on shelf-life of drinking water	Its common practice in some cultures to flavour their drinking water with spices by boiling them with small amounts of aromatic spices like, cumin, fennel. Besides adding flavour, the spices could also extend the shelf life of water.	Lim Yirong Timothy Goh Kai Qi Gina Goh Hua Jie Lok Si Ying Andrea	Mrs Choy Hui Peng Mr Chandrasegaran Palaniswamy	Bronze
D10	Sembawang Secondary School	Effects of rooftop gardens and rooftop swimming pools on lowering the temperature of buildings	This project investigates the effects of rooftop gardens and rooftop swimming pool/water catchment area in lowering the inner temperature of buildings. It is by simulating the rooftop gardens and swimming pools using models	Saranya D/o Mahendran Saktheeswari D/o Balakrishnan Ashiq Rasool s/o Oli Mohamed Indrani Subramaniam	Fong Yuen Han Cai Yongqin Raymond	Gold
D11	Serangoon Secondary School	An Investigation on the sound levels of study venues commonly used by teenagers in Singapore	The project seeks to measure the sound levels of venues frequently used by teenagers in Singapore for self-study and investigates whether the measured sound levels of the various venues are within sound limits known to induce annoyance as listed in the Guidelines for Community Noise (2001) published by the World Health Organisation.	Tay Shi Min Jasmine Koh Bao Ling Quek Yan Tong Ko Hui Xuan Lim Qun En	Mr Martin Lee Tze Chuen Mdm Low Tin Yan	COC
D12	Si Ling Secondary School	Investigation on the amount of electrolytes in sports drinks	To investigate whether a sports drink provides more electrolytes than orange juice	Chen Chuling Tran Nguyen Viet Tuyen Wei Lisha Chen Siqi	Mr Khoo Cheng	COP
D13	Yio Chu Kang Secondary School	Finding an environmentally friendly substitute for Plastic and Styrofoam	Styrofoam is non-biodegradable and environmentally unfriendly. In the event of producing them, much carbon dioxide is being released into the air. To save the Earth, Styrofoam has to be replaced by new environmentally friendly products.	Adeline Goh Ying Hui Gloria Teo Shu Fen Jamie Chew Joyce Ng ZhiMin	Jocelyn Kong Emily Lim	COC

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D14	Yishun Town Sec. School	Comparing the fuel efficiency of different types of biodiesel for automobile usage	Our objective of this project is to investigate if vegetable oil, namely Canola oil, Sunflower oil and soybean oil to create biodiesel with high fuel efficiency for automobile usage.	Chan Weng Wan Neoh Tse Chiang Elan Sim Wei Jie Goh Yu Fen Teo Liang Wei	Mrs Amanda Tan	Silver
D15	Team from China	Making of Villa Antitheft Alarm, Intelligentized Security & Antitheft Door System, and Courtyard Intelligentized Solar Energy Saving Device	Inspiration for the creation: nowadays many citizens in the society live in villas each with their own courtyards. However, such villas bring about concerns such as antitheft, security, facilities and energy saving .	Song Yushu Zeng Tai Zhou Feihui Dong Yuandian Zhai Ran	Zheng Qing	Bronze

Group E

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
E1	Anderson Secondary School	Research on factors that can improve the bacteriostatic properties of detergents	Controlling the growth of *Escherichia coli* without using bacteriostatic nor bacteriacidal agents but by controlling ambient parameters of pH and temperature and applying the findings to detergent manufacture.	Lim Jun Xi Alvin Tan Ngor Shing Yi	Mr Arthur Lim Kuan Yick	COC
E2	Anderson Secondary School	To design and build a fuel cell powered using chloroplasts	This project seeks to work on the feasibility of using chloroplasts which are readily available to be an alternate energy source/reservoir to power electrical appliances.	Cheryl Lim Su Wen Justin Ng Thian Huat Mak Wai Siong Joyce Lim Wen Xi	Mr Ivin Chan	Gold
E3	CHIJ St Nicholas Girls' School	Accelerating the ripening of fruit	The ripening of fruits (e.g., mango, papaya) is accelerated by the addition of ethylene through the addition of a rotten banana.	Chin Hui Min Belinda Lau Sze Leng Serene Lim Wen Yi Huam Yi Ling	Mr Alex Teoh Mrs Hoo Boon Leng	Silver
E4	Maris Stella High School	Investigating the antibacterial activity of cranberries and blueberries against common oral bacteria	The aim of the research is to find out if cranberries and blueberries contain antibacterial properties against common oral bacteria. Through this study, the team hopes to find out if cranberries and blueberries are suitable to be used as 'natural' oral care products	Chia Ying Wen Chau Jun Hao Chew Bing Hong Mervyn Lee Ming Xuan Lee Yongping Mervin	Prameeta Menon Amy	Gold

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E5	Montfort Secondary School	Hydroelectric Fish Tank	An attempt to convert the kinetic energy of water into electrical energy to sustain the filtering system of a fish tank	Desmond Lo Jian Wen David Chu Wei Ming Lee Jia Wei Kelvin Ong Wei-Xiang Bryan K.S Vikneshan	Mrs Tan-Sin Li Huang Mr Ho Chi Cheng Chrys	COC
E6	North Vista Secondary School	Optimisation of oil extraction from algae with the most cost effective method	In search of new source of biofuel, researchers are looking into using algae as a source for renewable fuels in the recent year. The aim of the experiment is to find out the most cost effective way of extracting oil from algae in order to use the 'algae oil' to make biofuel.	Firzanah bte Arifeen Ging Zi Qin Putri Amira bte Mohamad B Wong Zhen Qiong Nicole Zhao Rui	Dino Loo	Bronze
E7	Orchid Park Secondary School	Mpemba Effect – The Truth	Hot water freezes faster than cold water? This investigation attempts to verify and study if the Mpemba Effect still holds true under the varying conditions	Ou Dahao Joel Wong Muhd Fadhli Teoh Zhi Sheng	Mr Saktun Bin Tulus	Bronze
E8	Presbyterian High School	To investigate whether the natural herbs can be used to prolong the shelf life of bread	The project is to find out whether the natural herbs can be used to prolong the shelf life of bread. This is very useful natural preservative that can be used as an alternative to the artificial preservative	Oon Pek Har Rachel Irene Soh Qian Jing Kuik Yik Jean Chew Qian Wei	Mrs Choy Hui Peng Ms Chua Guat beng	COC
E9	Riverside Secondary School	Demonstrate the detrimental effect of phosphate which is found in detergent on freshwater life and to find a possible replacement for phosphate in detergent which is environmentally friendly	Demonstrate the detrimental effect of phosphate which is found in detergent on freshwater life and to find a possible replacement for phosphate in detergent which is environmentally friendly	Wendy Ng Li Ting Ang Wei Jia Gigi Tham Wan Xie Tan Sin Yee Belle Josiah	Mdm Ho Soo Yin	COC
E10	Sembawang Secondary School	Effects of different kinds of paint on the growth of microorganisms and their cost effectiveness	This project aims to analyze the effectiveness of anti-microbial properties of different kinds of Nippon paint and their cost effectiveness as compared to paints with no anti-microbial property.	Rebekah Toh Lin Gu Haixiang Ang Teck Ho Samuel Lin Fang	C Bhagyalakshmi Mr Kong Chin Chai Nicholas	COC

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E11	Serangoon Secondary School	An investigation on the effect of heat on the concentration of vitamin C	The project investigates the effect of heat and different methods of cooking on the concentration of vitamin C	Elissa Lim Yanting Lee Yuan Ting Amanda Nur Alifah Bte Azlan Nur Aqilah Bte Rajab	Lung Sau Ying (Mdm)	COC
E13	Yio Chu Kang Secondary School	The production of fuel gas from decomposition of fruits	To detect the presence of fuel gas, primarily methane gas in decomposing fruits like apple, orange and pear	Lee Li Pei Liu Jia Wei Calvin Ang Ching Ian Nicholas Ang Wei Yan	Leau Wan Hwee (Mdm) Huang Meifeng (Ms)	Silver
E14	Yishun Town Secondary School	Food Preservatives	Our 3 stage research involves investigating the best food preservative, if the quality of the preservatives affects it effectiveness and finally a survey to see if people prefer preserved food over frozen food.	Jacelyn Tan yilin Yong hui san Ryon Goh Ong si jia Chin han long	Ms Theresa Koh	Bronze

Group F

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
F1	Anderson Secondary School	Engineering an apparatus/instrument that possesses similar functions as rain gardens	To engineer an apparatus that is similar to rain gardens for reducing strength of effluent discharge. This prevents the 'stirring up' of accumulated ammonia in water bodies and ammonia poisoning.	Vincent Wee Yong Han Lim Zhao Ting Yeo Kheng Feng Khaw Xin Lin	Miss Mok Lai Koin Miss Wang Yuzhen	Gold
F2	Ang Mo Kio Secondary School	Creating A Soap To Remove Durian Odour From Hands	To make use of the durian husk to find out which part is repsonsible for removing the odour and then use that part to create a soap for a cleaner way of washing hands!	Wong Jingwen Soh Jun Wei Zarifah Bte Mohmad Azhar Low Zheng Heng Henry Ng Li Ting	Mrs Eunice Chan Baofen	Silver
F3	Canberra Secondary School	Research and Development of an Anti-Bacterial and Anti-Fungal Plant Sub-Culturing Medium	The project has succeeded in carrying out research and subsequent development of anti-bacterial and anti-fungal plant (orchid) sub-culturing medium that would enable sub-culturing of plantlets without sterile conditions.	Lim Jin Hon Endonna Ng Jin an Joey Ng Kai Woon Ang Kai Lin Nur Haryani Bte Kasman	Mohammad Nizam Nur Hamizah	Bronze
F4	CHIJ St Nicholas Girls' School	Converting fruit peel into ethanol as an alternative source of fuel	To use unwanted, used organic products, such as fruit peels to create ethanol through fermentation	Elizabeth Chen Jiahui Chin Hui Min Belinda Lim Kuan Fei Lim Wen Yi	Mr Teoh Chin Chye Alex Mrs Hoo Boon Leng	COC
F5	Deyi Secondary School	Investigation of naturally occurring mosquito repellants	To investigate which type of plant has the highest concentration of mosquito-repelling substance.	Tan Pueh Suan Sui Hui Ching Lim Jin Xuan Ling Jit Hui Vincent Bryan Ho Kang Xian	Mrs Joanne Gan	COC

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
F6	Holy Innocents' High School	Fuel Duel	In this experiment, the objective is to investigate the effect of salt percentage in water (fuel) on the output energy (in voltage minute) of the fuel cell	Heng Hui Hui Meng Shi Ze Ma Sai Tan Yoong Aunn Tan Zhong Ming	Chang Jee Yen	COC
F7	Maris Stella High School	The effects of urbanization on the diversity of anurans in Singapore	In this study, the diversity and abundance of anurans were determined across various urbanised locations in Singapore. This research project also addresses the conservation status in Singapore and possible improvement to slow the catastrophic declines.	Alex Tham Yeung Hong Jerome Tan Jun Ying Joel Tan Kin Koh Jun Xian Samuel Lau Keng Siang	Prameeta Menon Amy	COC
F8	North Vista Secondary School	Using marine plants to reduce concentration of pollutants in water	The aim of the project is to reduce the concentration of pollutants in water by submerging plants into tanks of polluted water filled with fishes.	Tan Kai Siang Javier Lee Wei Ling Chua Ming Hui Hsu Huishan Samantha Ng Bao Xian	Nurzuhailah Bte Ahmad Dino Loo	Gold
F9	Orchid Park Secondary School	To determine the types of pigments and amount of chlorophyll found in vegetables	To determine the different types of pigments and amount of chlorophyll found in different types of vegetables (Basil, Parsley, Spinach and Pumpkin).	Choo Zhe Huan Teo Shi Wei Ong Yu Hui Kelly Hoong Goh Jie Da	Mrs Puar Meng Chun Mdm Tan Geok Bee	COC
F10	Pei Hwa Secondary Schoo	The dual purpose corrugated cardboard stool	The invention of a dual purpose corrugated stool based on folding principles that enable both teachers and students to carry it around the campus for lesson use as well as acting as a bag	Chew Chia Wing Lim Xue Ting Josiah Liew Yi Xuan	Chia Koon Lui, Eileen	COP
F11	Riverside Secondary School	To investigate the types of mould on different kinds of bread	The aim of our investigation is to find out whether the types of mould growing on different types of bread are similar	Palvannanathan H Sharanya Pillai Chee Li Min Nai An Ni	Ms Tang Wai Yin	Bronze
F12	Si Ling Secondary School	Extract of acid–base indicators from natural products	To search for suitable indicators extracted from natural products that can be used in weak acid-strong base and strong acid-weak base titrations	Vibudha Omesh Devendra Ahmad Hashim B Suleman Hamirul B Mohamed Badrun Muhammad Shahfie B Azhar	Mr Khoo Cheng	Silver
F13	Si Ling Secondary School	Effect of storage temperature on the pH of fruit juice	To investigate the effect of storage temperature on the pH of fruit juice	Sor Jing Yee Tay Hui Min Teo Shu Liang Sulivia Yao Siyu Kane Raynard Goh Rong Wei	Mr Khoo Cheng	COC

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
F14	Yishun Town Secondary School	Comparing the effectiveness of natural tropical indicators to litmus paper and to commercialize the product	Investigate on various tropical natural indicators, such as purple cabbage and mangosteen skin and see whether they are able to indicate a wider range of pH values and colour change more effectively than Litmus.	Ng Xian Han Karthikan s/o Selvaraj Mothi Mohanan Kumar	Mr Goh Khern Hai	Bronze

Group G

	School	Title of Project	Synopsis of Project	Number of pupils in project group and their names	Name of teacher mentor or mentor from higher institutions	Results
G1	Anderson Junior College	Investigation of the photoconductivity properties of CNT-nanoparticles hybrid	This project investigates the effect on the electrical conductivity of CNTs by light and by the addition of metallic nanoparticles. Hence, we can find out the conditions for CNTs to conduct electricity at an optimal level	Lee Wei Ting Chan Lijuan Jasmine Muchtar Leonardi	Mdm Tay Sai Ghor Professor Sow Chorng Haur	COC
G2	Anderson Junior College	To investigate which leguminous plant is the most suitable for regeneration of primary forest	3 different species of leguminous plants will be subjected to different environmental conditions in a degraded secondary forest. Parkin speciosa is found to be the best legume for regeneration of primary forest	Ng Zhi Liang Dennis Tiong Jun Hao Bryan Denise Tan Wan Ting	Aw Meng Yuan Shawn K. Y. LUM	Gold
G3	Anderson Junior College	Investigation of eggshell membrane as adsorbent of copper ions	To investigate the application of eggshell membrane (ESM) derived from eggshells, for adsorption of copper ions from industrial wastewater in our experiment. Variations in initial copper concentration and ESM doses were studied. This method is efficient, low cost and environmentally friendly.	Leong Kah Wai Fong Jun Yoong Seow Chin Juen	Ms Koh Ee Hway	Bronze
G4	Anderson Junior College	Investigation of the Oleophilic and Hydrophobic nature of Hybrid Clay-CNT Composites	Our project focuses on removing oil spill by creating oleophilic hydrophobic clay-CNT hybrid that is capable of absorbing more oil as the presence of CNT has reduced the amount of water absorbed	Michelle Julius Jiang Lin Lalida Chunhasomboon	Mdm Sandra Ong Prof. Sow Chorng Haur	COC
G5	Anderson Junior College	Delivery of insecticides using synthesised polymer and starch-borate complex	To cope with the increasing cases of dengue fever, we have developed a product that can absorb stagnant water and simultaneously deliver an insecticide into excess stagnant water to eradicate any mosquito larvae present.	Ye Qijun Janice Tang Si Jia Co Sarajane Co	Mrs Ong Yee Ling	Silver

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G6	Anderson Junior College	Study of photocatalytic biocidal activity of doped titanium dioxide on Escherichia coli	TiO2 can break down microorganisms into mainly carbon dioxide and water and the reaction can be sped up if TiO2 is doped, under the exposure of UV light. This project aims to study which dopant, carbon, sulphur or tin, will most effectively increase the photocatalytic activity of TiO2, which Escherichia coli is used as a model microorganism.	Marvin Seow Xiang Ce Lina Diyanah Bte Ramli	Mr Chew Tse Yong Prof Sow Chorng Haur	Bronze
G7	Anderson Junior College	A Study On The Electrical Properties Of Diminishing Graphene Layers	Layers of graphene are obtained by taping off from a graphite sample. IV graphs are plotted by varying the voltage across the sample. Our objective is to observe the electrical properties of graphite	Alvis Mazon Tan Chang Siong Huan Yan Wei Neelakandan Naveen	Mr Chew Tse Yong Prof Sow Chorng Haur	Gold
G8	Anderson Junior College	Quantitative meta-analysis of the structural functions of IQ motif-containing proteins and their role in learning	This meta-analysis aims to unite existing research on how IQ motif proteins interact with Calmodulin protein, and hence, propose a model of how IQ motifs affect biochemical pathways of learning mechanisms	Seow Wei Lun	Mr Neo Chai Seng Professor Sheu Fwu-Shan, Department of Biological Sciences, National University of Singapore	COC
G9	Yishun Junior College	Building an Automated Object Collector using Bioloid Kit	An intelligent robot was built using the Bioloid kit, which is capable of automatically picking up objects within its vicinity, as it moved within a closed environment.	Sim Wen Qiang Rafael Peh Jun Xian	Phang Wei Lian A/Prof Marcelo H. Ang Jr., Department of Mechanical Engineering, National University of Singapore	COC
G10	Yishun Junior College	Synthesis of bio-ethanol from waste paper	This project aims to investigate the possibility of obtaining bio-ethanol from paper that we have collected from our college's general office. A yield of about 19.1% was obtained.	Oh PeiQi Lua WanZhen Ng XiTing	Lee Yong Kiang Justin	COC
G11	Yishun Junior College	Comparison of polymerase chain reaction primers for detection of Epstein-Barr virus DNA	The Epstein-Barr virus infects more than 95% of the world's population. This project evaluates the use of two primer sets for conventional PCR detection of EBV in 'unknown' samples that may or may not contain the extracted DNAs of the virus. The results obtained showed that both primers were comparable to each other in terms of sensitivity and accuracy	Yee XianYang Sherman Yang Feng Yap Li Ting Lynn	Lim Hwee Ming Irene Dr Adrian Yeo Chao Chuang (Singapore Polytechnic – School of Chemical & Life Sciences)	COC

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G12	Yishun Junior College	Investigations into the effects of the pitch of male voice on perceived attractiveness by females and the correlation between audio and visual attractiveness	The pitch of a male's voice, as an indicator of masculinity, affects its attractiveness to females, and there is a positive correlation between vocal attractiveness and visual attractiveness of males	Tammy Mak Tin Mei Seah Siu Ngee Delphine Phua Yee Min Abdul Mega Irani Muhammad Basyir Bin Firdaus	Seoh Kah Huat Robin Lim Lek Min Matthew	Bronze
G13	Yishun Junior College	Evaluation of Performance and Feasibility of Membrane Distillation Methods	This project aims to investigate how the performance of the Membrane Distillation technique is affected by factors like temperature difference and air gap length to increase its feasibility as an alternative solution for water scarcity problems	Desmond Lim Chung Chien Liau Gao Fu Tang Jia Hao[1]	Mr Jimmy Goh Giam Hwee A/Professor M. N. A. Hawlader, Dept. of Mechanical Engineering, NUS Miss Rubina Bahar, Dept. of Mechanical Engineering, NUS	COC
G14	Yishun Junior College	An investigation into the effects of milk disposal in a closed and simulated water-based ecosystem	Through a simulated water-based ecosystem, the effects of milk disposal the quality of water were investigated. Further experiments were performed to assess bioremediation methods to rescue the water parameters.	Tissany Ng Yin Ting Mohammad Faiz Bin Mohammad Zulkifli Galston Wong Kok Yi	Mr Seoh Kah Huat Robin Dr Lim Lek Min Matthew	COC
G15	Yishun Junior College	Expression of Tumour necrosis factor inhibitor gene in CHO-K1 cells	The project aimed to provide preliminary findings on the production of Etanercept using a modified plasmid, pBEE4.1, to make the commercial production of this therapuedic more cost effective and efficient	Theodora Chung Xue Ying	Ms Tay Woon Ping Prof Song Zhi Wei, Expression Engineering group, Bioprocessing Technology Institute Mr Ryan Haryadi, Expression Engineering group, Bioprocessing Technology Institute	Silver
G16	Yishun Junior College	Au naturel – Plants in water treatment	In this project, we investigate the water purification capabilities of *Moringa Oleifera* and chitosan (from crab shells) in comparison with aluminium sulfate. The effect of pH and temperature was also analysed.	Lim Zhen Yang Timothy E V S RaviShankar (Alex) LeMinh Duc	Lim Choon Huat Bryan	COC