

# PARTICIPATING SCHOOLS

Alfriston College

**Alfriston School** 

Aorere College

**Bucklands Beach Intermediate School** 

**Drury School** 

Elim Christian College

Farm Cove Intermediate School

**Howick College** 

**Howick Intermediate School** 

Manurewa High School

Mission Heights Junior College

Otahuhu Intermediate School

Papatoetoe High School

Pukekohe High School

Pukekohe Intermediate School

Rosehill Intermediate School

Saint Kentigern College

Sancta Maria College

Somerville Intermediate School

Tyndale Park Christian School

Waiuku College



# **CONVENOR'S REPORT**

It has been an honour to be part of the MIT Manukau City Science and Technology Fair 2012 rewarding the work achieved by our young people in science and technology. The fair received 207 entries from 20 schools across the Manukau and Counties regions, which proves that science and technology are being fostered by the schools, their families and wider community. We celebrate the excellence and innovation in the winning projects at this prize giving today.

For many students the fair provided an opportunity to explore areas of interest which are authentic and have significance in today's society. These emerging scientists are developing frameworks for research which they can use in vocations later in life. The fair has helped them secure a variety of prizes, and serves as a boost for applications for places in restricted areas of study at tertiary institutions.

The committee and judges were highly impressed with the standards of scientific thinking and authentic applications of their investigations and by the high standard of presentation, ingenuity and innovative nature of the investigations. Each exhibit reflected weeks of data collection, experimentation, analysis and presentation work by students, who have gone beyond expectations. We are also very proud of our Realize the Dream 2011 winner, Amy van de Weg.

The MIT Manukau City Science and Technology Fair 2012 has been the work of many teams of people. We are delighted with the businesses and organizations that supported our students through their sponsorship of the category and special prizes, some over a long period of years. We also welcome the new sponsors who have joined our team. Partnerships such as these have enabled us to maintain the positive status of science and technology for the past eighteen years. We give a special reference to our major sponsor the Manukau Institute of Technology, and to John Bell who has developed our business relationships. We thank them for their continued support and willingness to invest in our youth.

We wish to heartily thank the men and woman who are recognised specialists in their fields and judged the projects. The quality of the outcomes has been attributed to the high professional knowledge that the judges possess.

We thank also the other teams have given their time and expertise to make this fair successful: the committee members who have worked tirelessly throughout the year, those who helped with behind the scenes, and the Kiwanis Club of Papatoetoe. We also thank Mission Heights Junior College for their support and venue this year.

Finally a special thanks to the parents, teachers and families of the exhibitors for the support that they have given their children. The impact of this support is highly visible in the quality and depth of the projects. Seeing the work accumulated in the hall makes the work of everyone worthwhile. It shows us that our youth of today have potential and skills which are infinite, and worthy to represent the science and technology fields for New Zealand in the future.

Marilyn Roberts Science Fair Convenor









# GENESIS ENERGY REALISE THE DREAM

8 – 15 DECEMBER 2012

Realise the Dream is a prestigious national event which rewards and celebrates 20 secondary school students who have undertaken a remarkable piece of science research, technology or electronics project.

Students are required to be nominated by the regional science and technology Chief Judge and then the nomination is sent to the Realise the Dream selection panel whereby all nominations undergo a rigorous judging process.

Students who are selected for Realise the Dream are awarded an all expenses paid trip to attend the event. Realise the Dream starts in Auckland on 8 December and then travels down through the North Island finishing in Wellington where an awards function will take place. There are some huge prizes that are announced at the awards evening which include cash scholarships and international travel.

The trip will involve visits to cutting edge science institutions where they will be hosted by organizations such as the Leigh Marine Centre, the Liggins Institute, Dairy NZ, Massey University and NIWA. The students will also be involved in various team building challenges and social events.

The Royal Society is indeed grateful of the support of Genesis Energy (the principal sponsor) and DairyNZ and the New Zealand Commission for UNESCO who also sponsor the event. The Royal Society would also like to thank the many science organizations who host the students and prepare workshops for them during the week.

"I enjoyed Realise the Dream 2011. It definitely broadened my view on science. Seeing that I intend to study science at university in 2012, the activities and institutes that we visited gave an amazing insight and enlightened me about the diverse areas of science. I never realised the range of career options available in science. The friends I made from this event was definitely a highlight - friends that share the common love of science. I think the variety of team-building experiences we undertook were really important, especially seeing science is a team orientated field. I learnt so much and experienced so many unique opportunities". **Charlotte Robertson – 2011 participant** 

More information about Realise the Dream can be found at www.realisethedream.org.nz









The Royal Society of New Zealand is the independent national academy of science and technology. The Society believes that science and technology education is crucial if New Zealand is to improve its social, environmental and economic future.

To support these goals we are involved in a variety of initiatives.

This is a key initiative of the Royal Society designed to raise the profile of science teaching and learning in our primary schools. The Society will act as a catalyst to encourage, coordinate and promote activities to support effective learning for students.

#### Alpha series

Information leaflets designed to support the learning of science, mathematics and technology in the national curriculum

#### **BAYERboost scholarships**

For senior secondary school and undergraduate tertiary students to get experience in environmental research or restoration.

#### **BP Challenge**

Team events challenging students to design and develop 'solutions' to problems using easily resourced materials

#### **CREST**

An international awards scheme designed to encourage Year 6 plus students to be innovative, creative and to problem solve in science, technology and environmental studies through inquiry and investigation. Primary Science CREST now available.

#### **Education Links**

List of (hyperlinked) organisations who provide free online resources for teachers of science in New Zealand schools.

# **Environmental Monitoring and Action Project**

Brings schools, local authorities, research institutions and others together to allow students to carry out monitoring of their local region in an environmental education context

#### **Gamma series**

"Discussion papers" based on current issues that emerge in the media and become part of public debate.

### **Helix and Scientriffic Magazines**

Fun science and technology magazines for Year 3-Year 8+ students.

### **Manhire Prize for Creative Science Writing**

A creative science writing competition with non-fiction and fiction categories

### **Primary Science Teacher Fellowships**

Open to Primary teachers with an interest in leadership in science

#### **Realise the Dream**

A five-day event which celebrates, rewards, challenges and showcases the work of extra -ordinary school students from all over New Zealand who have achieved excellence in research, and technological practice.

#### **Reel Science**

Reel Science Film Festival is a competition for New Zealand students in Yr 11 - Yr 13 to make a 2 minute film on anything to do with science. The competition evolved from Big Science Adventures.

# RSNZ newsletters and notifications for teachers e.g. Heads Up

### **Science School Scholarships**

The Royal Society of New Zealand administers several science school programmes, which provide an opportunity for secondary students to take part in research projects, participate in forums and visit international science fairs.

#### **Awarded Teacher Fellowships**

Providing teachers with new experiences and understanding outside the classroom that will enable them to become more effective educators.

#### **Sharing the Learning**

A series of professional development workshops for teachers by past Teacher Fellows.

### **Student Showcase**

Showcasing some of what the Royal Society's Young Achievers.

For further information on these and any of our education programmes visit our website <a href="https://www.royalsociety.org.nz">www.royalsociety.org.nz</a>





# PREMIER AWARD WINNER - 2011

# Amy van de Weg – Manurewa High School

"Discovery consists of seeing what everybody has seen and thinking what nobody has thought." - Albert Szent-Györgyi, a Hungarian scientist credited with the discovery of vitamin C.

Discovery is at the heart of science. All saw the apple fall from the tree, but Newton was the first to think... well actually... why is this happening? It is the inquisitive minds like his...like yours... that will lead the world in challenging what we have come to accept as the norm.

We are all gathered here this evening to celebrate the scientific achievements of the students in our community. Whether it is your first time here today or your last, it signifies the fact that you have made a contribution to science. We all congratulate you.

To the parents, and teachers here supporting the students here this evening, thank you.

From my own experiences I know how vital a role you play. From questioning the student to help form an idea all the way through to the frantic assembly of the display board on the morning of entry, you are there for them.

Last year, I was sitting where you were. After many flopped plans, I finally found something that I could test. My project was to measure the bisulfite levels in wine and to see if the bisulfite ion in the wine has an impact on dietary thiamine levels. Sounds... "interesting" right? It is probably not your cup of tea.

That is the great thing about science though; it is not always about the big whizzy bang discoveries. It can simply be an investigation into things that are relative to you as a person. Having had allergies to sulfur as a child, the presence of these ions and other sulfur containing compounds in food and drink that I consume on a regular basis was very interesting to me. From this project I found which wine had the most and least amount of the bisulfite ion and that no, it did not have an effect on the amount of dietary thiamine in the body while in your body.

Science has given me amazing opportunities from finding my passion, directing me in my studies and even a trip overseas. Last year, I was lucky enough to be selected to attend YANZAAS in Brisbane. Over there, around 60 people from around Australia and New Zealand gathered together for the love of science and explored where it could take us by observing research and postgrad work at various institutes. We all still keep in contact to this day.

In closing, I wish you all the best in your future endeavours and will leave you with this from Albert Einstein: "I believe in intuition and inspiration. Imagination is more important than knowledge. For knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution. It is, strictly speaking, a real factor in scientific research."



# **Prize Giving Programme**

Wednesday, 15 August 2012

Masters of Ceremonies Carin Newbould

George Stephens, Senior Fire Risk Officer, Manager

Strategic Partnerships, NZ Fire Service

Welcome Joan Middlemiss, Principal, Mission Heights Junior

College

Convenor's Address Marilyn Roberts

Guest Speaker Amy van de Weg

Premier Award Winner 2011

### **Presentation of Category Prizes**

**1. Years 7 & 8 Living World**Wellingford Wai Shing, Managing Director
On behalf of Wai Shing Ltd

Years 7 & 8 - Physical & Neil Allan, Past PresidentMaterial World On behalf of the Kiwanis Club of Waiau Pa-Clarks Beach

3. Years 7 & 8 - Environmental Joan Ransom, Past President
Science/Planet Earth and Beyond On behalf the Kiwanis Club of Manukau

**4. Years 7 & 8**Intermediate Consumer Science
Dean Tohill, President
On behalf of the Shamrock Kiwanis Club

**5. Years 7,8,9 & 10 Technology/Innovations**Jacqui Davidson, Administration Manager
On behalf of the K P Group Ltd

6. Years 9 & 10 Robyn Mekkelholt
Living World On behalf of Gunac/GME Ltd

**7. Years 9 & 10 Physical World**Bruce Cooper, Principal Mechanical Engineer
On behalf of NZ Steel Ltd

8. Years 9 & 10 Trevor Biddle, President

Material World On behalf of the Kiwanis Club of Papatoetoe



9. Years 9 & 10 – Environmental Science/Planet Earth & Beyond

Aaron Jones, Manager On behalf of BNZ Manukau

10.Years 9 - 13

**Secondary Consumer Science** 

Edna May Wood, President

On behalf of the Kiwanis Clubs of Drury &

Papakura

11.Years 11,12, & 13 Senior Science Bill Barwood, Industry Education Facilitator

On behalf of DairyNZ

### Musical item presented by Mission Heights Junior College

### **Presentation of Special Prizes**

Prize for Best Year 7 Innovation Invention or Investigation

Graeme McClennan

Manager Schools and Community

On behalf of Manukau Institute of Technology

Prize for Best Year 8 Innovation Invention or Investigation

Graeme McClennan

On behalf of Manukau Institute of Technology

Prize for Best Year 9 Innovation Invention or Investigation

Graeme McClennan

On behalf of Manukau Institute of Technology

Prize for Best Year 10 Innovation

**Invention or Investigation** 

Graeme McClennan

On behalf of Manukau Institute of Technology

Prize for best year 11 Innovation

**Invention or Investigation** 

Graeme McClennan

On behalf of Manukau Institute of Technology

Prize for Best Year 12 Innovation

**Invention or Investigation** 

Graeme McClennan

On behalf of Manukau Institute of Technology

Prize for Best Year 13 Innovation

**Invention or Investigation** 

Graeme McClennan

On behalf of Manukau Institute of Technology

IET Innovation Awards

Yan Liu

On behalf of the Institution of Engineering and

Technology

DairyNZ Awards

Bill Barwood

On behalf of DairyNZ



Best Use of Statistics Awards Gary Troup

On behalf of the NZ Statistical Association

Earth Science Award Gary Troup

On behalf of the Australasian Institute of Mining &

Metallurgy (New Zealand Branch)

Best Use of Flour Awards Marilyn Roberts

On behalf of the Baking Industry Research Trust

Best Soil Related Project Award Marilyn Roberts

On behalf of the NZ Society for Soil Science

Student Encouragement Award Katie Beeson, Divisional Manager, Botany Youth

Division

On behalf of The Order of St John,

Manukau Area Committee

**Environment Award** Katie Beeson

On behalf of The Order of St John, Manukau Area

Committee

University of Otago Award Xenia Bilton

On behalf of the University of Otago

Best Project by a Maori Student Graeme McClennan

On behalf of Manukau Institute of Technology

Best Project by a Pacific Student Graeme McClennan

On behalf of Manukau Institute of Technology

**Award for Best Application of Electronics** Graeme McClennan

On behalf of Manukau Institute of Technology

New Zealand Heritage Award Graeme McClennan

On behalf of Manukau Institute of Technology

Eric Clague Kiwanis Award

Bette Eavestaff, Lt Gov, Division 10, NZ South

Pacific District of Kiwanis International

On behalf of Kiwanis Clubs of Counties Manukau

### **Presentation of the Premier Award**

Premier Award for Graeme McClennan

Best Exhibit of the Fair On behalf of Manukau Institute of Technology

Concluding Address Dr Stuart Middleton, Director External

Relations



On behalf of Manukau Institute of Technology



Category 1 - Years 7 & 8 Living World

Sponsor: Wai Shing Ltd

FIRST PLACE Ishani Mathur The Greasy Facts Somerville Intermediate School

SECOND PLACE

Josh Ellwood

Don't Make Me Angry

Somerville Intermediate School

THIRD PLACE
Aimee Mackenzie
Striding Around
Somerville Intermediate School

HIGHLY COMMENDED

Anna Farrell

A Natural Answer to a Natural Disaster

Somerville Intermediate School

Yashmeeta Govind
Test Your Brain
Somerville Intermediate School

Niraant Trilokekar Feeling Hot, Hot, Hot Howick Intermediate School Category 2 - Years 7 & 8 Physical and Material World Sponsor: Kiwanis Club of Waiau Pa-Clarks Beach

FIRST PLACE **Dylan Townsend** *Oil Disaster Clean up Faster*Mission Heights Junior College

SECOND PLACE

Matthew Stevens

Double or Nothing

Pukekohe Intermediate School

THIRD PLACE
Oliver Kerr
Papyrus vs Paper
Bucklands Beach Intermediate School

HIGHLY COMMENDED Thomas MacPherson Angle of the Dangle Saint Kentigern College

**Flynn Palmer** *Bridge*Bucklands Beach Intermediate School

Michael Purcell How Much Weight can Water Take? Bucklands Beach Intermediate School







Category 3 – Years 7 & 8 Environmental Science/Planet Earth & Beyond Sponsored by the Kiwanis Club of Manukau

FIRST PLACE Kendall Mead Shocking Growth Drury School

SECOND PLACE

Emily Briggs
A Fracking Dilemma

Bucklands Beach Intermediate School

THIRD PLACE
Braden Du Plessis
Super Sorbents
Somerville Intermediate School

HIGHLY COMMENDED

Cameron Hooper

Desalination

Pukekohe Intermediate School

Brandon Kirkness Ocean Doomed Pukekohe Intermediate School

**Ashmita Mirajkar** *Target Earth*Bucklands Beach Intermediate School

Category 4 – Years 7 & 8 Intermediate Consumer Science Sponsored by the Shamrock Kiwanis Club

FIRST PLACE
Alexandra Page
Plastic Bag Weigh-in
Somerville Intermediate School

SECOND PLACE
Matt Boulger
Campbell Crawford
Xavier Waters
It's Batastic
Rosehill Intermediate School

THIRD PLACE **Zara Iqbal** *Effectiveness of Common Household Cleaners*Somerville Intermediate School

HIGHLY COMMENDED

Namisha Chand

Everlasting Life

Howick Intermediate School

Aaron Mack You Get What You Pay For! FarmCove Intermediate School

**Benjamin Mason**What Type of Battery Lasts the Longest?
Alfriston School







Category 5 – Years 7 - 10 Technology Innovations Sponsored by KP Group Ltd

FIRST PLACE **Dylan Turner**Wireless Electricity

Howick College

SECOND PLACE
Sebastian Jones
Feline Fun
Somerville Intermediate School

THIRD PLACE

David Lin

Power Laces

Howick College

HIGHLY COMMENDED
Nick Lang
Ramneek Sandhu
Luke Trotter
Suncatcher
Mission Heights Junior College

Samuel Malan Samuel Patel Solar Ralos Elim Christian College

Shasa Evaroa Brendon Te Kanawa Suckit Socket Waiuku College Category 6 – Years 9 & 10 Living World Sponsored by Gunac South Auckland GME Ltd

FIRST PLACE Georgia Moore Rainbow Reaction Alfriston College

SECOND PLACE Lindsay van Ryn Sugar Rush Elim Christian College

THIRD PLACE Elaine Ryan Smok'n Stomata Howick College

HIGHLY COMMENDED Swashna Lal Asha Shashikumar Pick Me Up in 5? Mission Heights Junior College

**Isabel Chen**Photosynthesis of Spinach
Elim Christian College

Jessa Ilano Louise Kim Nishalia Maharaj Curdle Me Maybe Mission Heights Junior College







Category 7 – Years 9 & 10 Physical World Sponsored by NZ Steel Ltd

FIRST PLACE **Samuel Vivian**Ready Aim Fire!

Tyndale Christian School

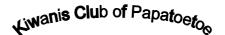
SECOND PLACE Anne Phan High Heel Hazards Alfriston College

THIRD PLACE
Jeremy Thompson
Propellers with a Twist
Howick College

HIGHLY COMMENDED Cedric Wiremu The Physics of Maurakau Manurewa High School Category 8 – Years 9 & 10 Material World Sponsored by the Kiwanis Club of Papatoetoe

FIRST PLACE Simone Kritzinger Victoria Pickett Water Strider Howick College









Category 9 – Years 9 & 10 Environmental Science/Planet Earth & Beyond Sponsored by BNZ Manukau Banking Centre

FIRST PLACE
Shahil Lal
Harish Narasimhan
Brodie Waugh
Green Machine
Mission Heights Junior College

SECOND PLACE
Victor Barnes
Win'Force
Tyndale Park Christian School

THIRD PLACE **Prina Mistry**Oil Spills Oil Kills

Mission Heights Junior College

Category 10 – Years 9 -13 Secondary Consumer Science Sponsored by the Kiwanis Clubs of Drury & Papakura

FIRST PLACE **Garling Wu** *Grease or Gold*Manurewa High School

SECOND PLACE
Rosie Graham
Chloe Wang
Piece 'A' Cake
Elim Christian College

THIRD PLACE **Anmol Sandhu** *Mighty Milk*Mission Heights Junior College

HIGHLY COMMENDED **Tryphaena Kumar**  *Kamut – King of Flours?* Manurewa High School

Paul Stainthorpe Hydration Salvation Manurewa High School

Jessica Stewart Metallic Munchies Elim ChristianCollege







# **Additional Awards**

Category 11 – Years 11,12 & 13 Senior Science Sponsored by Dairy NZ

FIRST PLACE Lewis Powell Resistant Worms Pukekohe High School

SECOND PLACE **Aaron Boot**Vitamin C of Tropical Fruit

Pukekohe High School

THIRD PLACE

Jaspreet Singh

Assessing Antioxidant Activity

Manurewa High School

HIGHLY COMMENDED

Anton Good

Develop a Steam Powered Lawn Mower

Pukekohe High School

**Ryan Matheson**Petrol Octane Ratings: What's the Difference?
Pukekohe High School

IET Innovation Award

Sponsored by The Institution of Engineering andTechnology Young Professionals Auckland Branch

SENIOR AWARD

Anton Good

Develop a Steam Powered Lawn Mower

Pukekohe High School

JUNIOR AWARD Sebastian Jones Feline Fun Somerville Intermediate School



**DairyNZ Award** Sponsored by Dairy NZ

FIRST PLACE **Lewis Powell** Resistant Worms Pukekohe High School

SECOND PLACE
Mikayla Chetty
Is it Healthy?
Mission Heights Junior College







# **Additional Awards**

#### **Best Use of Statistics Award**

Sponsored by The New Zealand Statistical Association

#### **Bhav Bhatia**

Big Head, Small Head Somerville Intermediate School



#### **Earth Science Award**

Sponsored by the Australiasian Institute of Mining & Metallurgy (New Zealand Branch)

#### **Rhys Jones**

The Effect of Common Human Stimulants on Plant Growth Pukekohe High School



### **Best Project Using Flour**

Sponsored by the Baking Industry Research Trust

#### First Place

#### **Sabrina Snoad**

To be Gluten Free or Not to be? Somerville Intermediate School

Second Place

Rosie Graham Chloe Wang

Piece 'A' Cake

Elim Christian College



### **Best Soil Related Project**

Sponsored by the New Zealand Society for Soil Science

# **Jack Boulton**

Detecting Soil Moisture Pukekohe High School



#### **Student Encouragement Award**

Sponsored by The Order of St John, Manukau Area Committee

Nyasha Mushunje Chontelle Vaevae

Save Our Streams
Mission Heights Junior College





# **Special Prizes**

Prize for Best Year 7 Innovation, Invention or Investigation Sponsored by Manukau Institute of Technology

Prize for Best Year 8 Innovation, Invention or Investigation Sponsored by Manukau Institute of Technology

Prize for Best Year 9 Innovation, Invention or Investigation Sponsored by Manukau Institute of Technology

Prize for Best Year 10 Innovation, Invention or Investigation Sponsored by Manukau Institute of Technology

Prize for Best Year 11 Innovation, Invention or Investigation Sponsored by Manukau Institute of Technology

Prize for Best Year 12 Innovation, Invention or Investigation Sponsored by Manukau Institute of Technology

Prize for Best Year 13 Innovation, Invention or Investigation Sponsored by Manukau Institute of Technology



Sponsored by The Order of St John, Manukau Area Committee

University of Otago – Hands on Science Award Sponsored by University of Otago

**Best Project by a Maori Student** 

Sponsored by Manukau Institute of Technology

Best Project by a Pacifica Student

Sponsored by Manukau Institute of Technology

Award for the Best Application of Electronics Sponsored by Manukau Institute of Technology

**The New Zealand Heritage Award** 

Sponsored by Manukau Institute of Technology

The Eric Clague Kiwanis Award

Sponsored by Kiwanis Clubs of Counties Manukau

Premier Award for Best Exhibit of the Fair

Sponsored by Manukau Institute of Technology













# With Special Thanks to

The team of judges are recognised specialists in their fields. They have been drawn out of a wide spectrum of professional areas: schools, universities, technology institutes and engineering.

Chief Judge Assistant Chief Judges

Marilyn Roberts Sally Barclay

Benson Chen Carol Duffield Chris Milham

**Judges** 

Sophia Aatava Dion Cowley Bree Mitchell Bill Barwood John Duncan Stuart Palmer Viljay Bhagwandin Lyn Dunbar Isuru Pathirana Xenia Bilton Yan Fong Shane Pinder Tyson Cabral Sharon Graham **Bob Reay** Alaster Caine Gauray Guiral Eleanor Reav Herve Carpentier **David Haines** Matthew Richardson

Alex Cashen

Andrew Chalmers

Fabian Champion

Matthew Richardson

Charlotte Robertson

Jessica Ross

Stephen Tredwell

Kamrul Jalil

Charles Tsui

Marie Choureemootoo Kamrul Jalil Charles Tsui John Cook Yan Liu Sachini Yapa Owen Colbert Peijing Li

### **Science Fair Committee**

ConvenorMarilyn RobertsSecretaryLiz PalmerTreasurer/Sponsorship ConvenorJohn BellJudging ConvenorMarilyn RobertsWebmasterChris Milham

Prize giving Liz Palmer, Beryl McKinnell & John Bell

And the many other science teachers who have attended committee meetings throughout the year.

Special thanks to the Mission Heights Junior College for hosting the MIT Manukau Science Fair and to Assistant Principal, Melanie Kindley, and IT specialist Ben Doughney, for their invaluable assistance; and to Manurewa High School Science Technician, Heather Wilson, for her ongoing support of the fair; and to those schools that grant leave to their science teachers and technicians to assist with the running of the Science Fair.

Website: <a href="https://www.sciencefairmanukau.org.nz">www.sciencefairmanukau.org.nz</a>

