

Congratulations

St Paul's Collegiate wins ChemQuest second year running

St Paul's Collegiate School has taken out the top prize for the second year running at the Waikato University ChemQuest. The school also won second place. First place went to Andrew McPherson, Evan Wilson and Chang Zhai from the St Paul's team called 'Team'. The students were awarded the James and Wells trophy, \$150 and a gold medal each. The annual chemistry quiz gives year 12 chemistry students the chance to put their chemistry knowledge to the test in a pop quiz-style challenge. The after-school event was held at the University of Waikato in October and was attended by almost 200 students, made up of 66 teams of three.

Science students win regional council prize

Two Waikato University science students have won the Environment Waikato Prize in Water Science for 2010. The Environment Waikato prize is awarded annually to the top Bachelor of Science student enrolled in water science papers within the Faculty of Science and Engineering. This year the prize was given to Joshua Scarrow and Ivan Schroder who will jointly receive \$500 in book vouchers. Scarrow, from Katikati, is this year starting his masters in microbiology while Bulgarian-born Schroder, who grew up in Hamilton, is completing honours, majoring in chemistry and earth and ocean sciences.

PhD engineering student awarded energy research scholarship

Talented Waikato engineering student Timothy Walmsley has been awarded the Todd Foundation Scholarship in Energy Research. The scholarship recognises the work of Sir Bryan Todd, a scientist who was instrumental in the development of the New Zealand oil and gas industry. The scholarship of \$25,000 per year for three years, will support Timothy while he completes a PhD in engineering. His research will be completed within Waikato University's Energy Research Group, and will look at ways to increase the energy efficiency of powder production by recovering energy from hot humid exhaust air streams.

What's on

14 APRIL

Kingitanga Day

Kingitanga Day is a celebration of the relationship between the University of Waikato and the Kingitanga. Kingitanga Day is an opportunity for our students, staff and the wider community to gather on campus and celebrate our distinctive heritage, histories and relationships.

13 MAY

University Open Day

The University of Waikato Open Day is an invitation to the public to come on campus and experience a taste of university life. The free open day offers visitors a chance to attend mini-lectures on a wide range of topics, get involved with interactive displays and view a range of fun activities and entertainment.

7-8 JUNE

Waikato Experience Biology Days

Come along to the Department of Biological Sciences' WEB Days for year 13 biology students and teachers. Seminars and lab work cover topics such as DNA technology, human evolution, and animal behaviour. Contact biology@waikato.ac.nz

15 JUNE

NZIC Analytical Chemistry Competition

Teams of year 13 students are set an analytical task, requiring accurate and careful analysis of an unknown substance. The results are judged and prizes and trophies are awarded on the day. Contact chemistry@waikato.ac.nz

30 JUNE - 1 JULY

Osborne Physics and Engineering Days

Upper secondary school students and teachers are invited to lectures and demonstrations relevant to the physics curriculum and current research. Contact engineering@waikato.ac.nz

29 JULY

Engineering Open Day

Spend a day at Waikato University learning about the exciting world of engineering. Participate in hands-on workshops and discover the study options available. Register early - numbers are limited. Contact science@waikato.ac.nz

For a full list of events, visit events.waikato.ac.nz

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Student motorsport team face challenges in Melbourne

A second place and a number of personal bests in the static events at the Formula SAE-A competition in Melbourne were not enough to gain the University of Waikato Formula SAE Team the overall top ten placing they were hoping for, following starter motor failure before the car could be raced.

The Waikato University student team received high marks in the Design and Business/Marketing sections of the competition, including an outstanding second place in the Cost section, out of the 28 teams competing.



Waikato's 2010 Formula SAE race car is tested for leaks and stability at the 2010 competition.

Team members at the competition included David Lynch, Nicola Harrison, Luke van Dijk, Mitchel Woodhouse, Daniel Lamb, Brennan Rietema, Alex Hodge, William Smith and Mark Shrimpton.

Matter of Fact

Newsletter from Science & Engineering and Computing & Mathematical Sciences



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

Summer 2011

Science Summer Fun at Waikato



Kaveshan Naidoo of Napier Boys' High School (left), Julia Berney of Te Awamutu College and Cherry Ngan of Hillcrest High School hold up the beads they created in the biochemical engineering lab. Photo: Natalie Guest

A week packed full of exciting science sample collection and lab work, coupled with fun team-building activities and a tour of Hill Laboratories, provided a memorable end to 2010 for the lucky school students attending the Hill Laboratories Waikato Science Summer School late last year.

From December 5-10, 40 year 12 science students from the central North Island descended on Waikato University for the annual week-long Science Summer School sponsored by Rotary International and Hill Laboratories.

The budding young scientists began their week with a field trip to the Waihi area, investigating the region's past and present mining sites. The students enjoyed a walk through Karangahake Gorge and a bus tour of the Favona Mine processing plant. Soil samples were collected from Golden Cross Mine, Gilmour Lake and

Paeroa and the fieldtrip concluded with an afternoon at Bowentown to collect sand samples and explore the rocky shore.

The remainder of the week was spent in Waikato University's science and engineering labs, analysing samples and experimenting with the university's state-of-the-art instruments.

Among other experiments, the labs included conducting laboratory analyses of water samples taken from Gilmour Lake, identifying rock samples from the Karangahake Gorge in the earth sciences lab and testing Bowentown sand samples for magnetic minerals and Paeroa tailings for traces of gold in the chemistry lab. The students also had the opportunity to try biochemical engineering and electronic engineering.

On the last day of the Summer School, the students presented their opinions on possible new mining sites in New Zealand, as well as rehabilitation plans for when mining has ended.

"I am very excited with the quality and enthusiasm of the students involved in this year's summer school. They maintained a keen interest in all field and laboratory activities throughout the week, and frequently asked intelligent scientific questions," says Adrian Pittari, Hill Laboratories Waikato Science Summer School Convenor.

Each student applied to their local Rotary club to be in the running to attend the Summer School. The 40 students were then selected by Rotary, from around 70 applicants.

Main sponsor Hill Laboratories is the country's largest privately owned analytical testing laboratory, specialising in a wide range of environmental, agricultural, food safety, food residue and air quality testing.

"Good science is close to our heart, and our strategic plan includes an intention to support young people as they pursue their own interests in science," says Steve Howse, Hill Laboratories' General Manager.

Applications for the 2011 Hill Laboratories Waikato Science Summer School open from July 25. Current year 12 students: contact your science teacher or visit www.sci.waikato.ac.nz/HillSummerSchool



Nathaniel Buckley of Hamilton Boys' High School (left), and Vincent Aw of Hillcrest High School learn about the geology of the rocks at Karangahake Gorge from Waikato University Volcanologist Adrian Pittari (centre). Photo: Natalie Guest

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Science Foundation success

Waikato University chemistry student Megan Grainger didn't let a few small hurdles stand in her way when it came to her university studies. Following successful undergraduate and masters degrees, this talented student is taking the exciting step up to a PhD.



PhD chemistry student Megan Grainger enjoys the hands-on learning approach within the Faculty of Science & Engineering at Waikato University. Photo: Natalie Guest

Megan has a Bachelor of Science (BSc) under her belt and has recently submitted her Master of Science (MSc) thesis for assessment. Always ready for a challenge, she has just started her PhD in Organic Chemistry, studying Manuka honey.

Megan has earned many accolades to her name in her five years at university. She received the award for top chemistry student in her year for three years in a row, was awarded an astounding 10 scholarships throughout the years and presented her masters research at an international symposium in Sydney last year.

Having never studied chemistry or biology at high school due to timetable clashes, the former Hamilton's Fraser High School student admits her first year in the BSc degree was definitely a challenge. "Because I hadn't taken the necessary school subjects to be eligible for the BSc, I completed a four-week Science Foundation bridging course to understand the basics of chemistry and biology," says Megan.

Megan began the BSc planning to major in biology, with papers in Japanese; but it didn't take long for

her to discover her passion for chemistry. "I was offered part time work in a Waikato University chemistry research laboratory. I enjoyed the practical work and had a desire to learn more and discover something no one else has. In my second year I removed Japanese papers from my course to make room for more chemistry papers and by my third year, my course was full with only chemistry papers."

Following her BSc Megan moved onto the next challenge: a Master of Science, which involves two years of additional study on a research topic. Her project entailed developing a method to analyse trace elements in glass and creating a database of automotive glass relevant to New Zealand. Her research will be used in forensic cases involving glass fragments, to link a person to a crime scene.

The Science Foundation programme at Waikato University is for students who have University Entrance but require additional tuition in science and maths. Visit www.conted.waikato.ac.nz for more information.

The ultimate gaming weekend

Twenty pizzas, 80 sausages, 150 litres of coke, fish and chips for 40, and 48 hours with no sleep.

Auckland Anniversary weekend may have been a holiday for some, but for a hardy bunch of Hamilton computer game enthusiasts, it was spent competing in the third annual 48 hour Global Game Jam. The local event was hosted by Waikato University's Computer Science Department. During the same weekend, Game Jam events were held simultaneously in 44 countries throughout the world.

The 38 Hamilton competitors broke into 12 teams, and each produced a five-minute computer game based on the theme of extinction. The Hamilton weekend culminated in a People's Choice Award for the game judged best by the group.

The winner was Tim Rudkins of Team ThoughtPolice, who produced a solo effort, entitled Extinction of Thought. In the game, the player is a dictator trying to extinguish ideas, leaving the people of the country dull and grey.

"There was a great creative atmosphere. It's quite something to create a game in 48 hours, and to be in a room filled with people who are all bouncing



Waikato University computer science lecturer Bill Rogers presents the People's Choice Award to Tim Rudkins for the innovative computer game which he created during the 48 hour Global Game Jam.

ideas off each other and helping each other out," says Tim.

Waikato computer science lecturer Bill Rogers says the reason Tim's game was so popular was that the game objective was clear. "People in the audience could immediately imagine themselves playing it and were left wanting to try it out.

That's the definition of a good game idea."

Also popular was the game Flee, created by Waikato University students Amigo Huang and Pascal Tian.

To join the 2012 Global Game Jam, register online in late 2011 at www.globalgamejam.org.nz

A passion for animal welfare

A fascination with animal behaviour and a PhD at Oxford University has led to two exciting roles at the Food Animal Initiative Ltd (FAI) for Waikato science graduate Ashleigh Bright.

Following her secondary school education at St Dominic's College in Auckland, Ashleigh completed a Bachelor of Science and Master of Science at Waikato University, majoring in Biological Sciences, with a focus on animal behaviour.

"My main role is as Project Manager for The Model Farm Project – a partnership between FAI and the World Society for Protection of Animals (WSPA). The project is based in China, Brazil and the United Kingdom, setting up farm-based networks as demonstrations of commercially-viable, humane and sustainable farming.

My second role is as a scientist with FAI. I'm involved in any animal behaviour/welfare research projects on the farms and with commercial industry partners. Our role is to link academia and industry. We take the scientific research, get it working on our farms and then launch it into the wider world."

While studying at Waikato Ashleigh received a University of Waikato Masters Scholarship and was encouraged by her supervisors to apply for a Top Achiever Doctoral Scholarship at the University of Oxford, which she successfully obtained.

Ashleigh was originally enrolled in marine biology and it wasn't until her second year at Waikato that she discovered her fascination with animal behaviour.

Ashleigh's advice: "Keep your options open. What you think you want to do at the beginning of a degree is often not what you want to do at the end. If you come across a subject you find interesting, try it!"

Want to read more Science & Engineering graduate success stories? Email science@waikato.ac.nz with your name and address to request a copy of the Faculty's new brochure 'The Grad Files'.



Waikato graduate Ashleigh Bright spends time in Brazil on the model farm, which was created to promote humane and sustainable farming.



Ashleigh Bright (right) pictured with a farmer in China at FAI's second model farm to be created as part of The Model Farm Project.

Engineering ingenuity on show at Waikato



A single-seater battery-powered electric vehicle was just one of the outstanding engineering design projects on show at the University of Waikato in October last year.

The Carter Holt Harvey Pulp & Paper Engineering Design Show gave Waikato engineering students from years two, three and four the opportunity to showcase their prototypes. The students also presented posters detailing their designs and gave short talks on their research projects, which were marked by Waikato University lecturers.

Associate Dean of Engineering Janis Swan says the show was a real buzz. "The students scrubbed up nicely and did themselves proud, both in their research presentations and talking about their design projects. I had many compliments from the general public about how interesting the displays and posters were, and also on the quality of the students' work".

Other projects on show included a Floating Eco House model, and displays on the topics of Closed Loop Spray Drying in Industrial Milk Powder Plants and Tail Water Depression at Maretai 1 Hydro Station.

Sean Taylor (left), Ali Hassan and Kiel Mans (in car) with their winning engineering project. *Photo: Natalie Guest*