

GREEN LABS

2016

ANNUAL REPORT

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THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

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MESSAGE

from the Manager Sustainability Operations and
Project Officer Sustainability

2016 has been another rewarding year for the Green Labs Program, which has trialled a number of new initiatives, developed new resources and delivered several informative update sessions. It is wonderful to be able to use the University community's expertise to become informed on selected topics, and we thank each of the UQ professors who spoke at this year's update sessions.

Green Labs entered its fourth year running in 2016, so we thought this would be an appropriate time to evaluate the program and determine if it is continuing to meet its aim of equipping representatives with the tools and confidence to become change agents in their laboratory. We sent a survey to all representatives asking for their feedback on the program and its various elements. Results indicated that the update sessions are considered the most valuable element of the program; information included in Green Labs newsletters is also highly valued. Taking these results on board, we will continue to run informative update sessions on topics of interest to representatives and pack newsletters full of relevant and motivating information.

The Green Labs Program continued to expand in 2016, welcoming five new representatives: we now have representative in the Centre for Mined Land Rehabilitation, the Advanced Water Management Centre and the National Research Centre for Environmental Toxicology.

Green Labs representatives instigated and embraced new sustainability initiatives in 2016 and played an important role in inspiring others to embrace sustainable change. We thank all our Green Labs representatives for their contributions this year.

This report is compiled by the Sustainability Office,
Property and Facilities Division.

GREEN PROGRAMS ASSISTANT

The Green Labs Program is managed by the Green Programs Assistant. This position is held by a UQ student, which gives them the opportunity to gain valuable work experience coordinating the administrative part of the program. In second semester 2016, the Green Programs Assistant position was appointed to Claire Sauvage. Claire is a third-year Environmental Management (Honours) student with a particular interest in climate change adaptation and the way behavioural shifts can translate into sustainability outcomes.

In her role as the Green Programs Assistant, Claire has worked alongside Green Labs representatives to organise update sessions, coordinate promotional activities and complete Green Labs surveys. Claire also works with the Sustainability Office to continue exploring ways to expand the Green Labs Program's reach and influence. Claire will be completing an internship with CSIRO Environmental Sustainability over the Summer Semester; she aims to return to work in the Sustainability Office in 2017 and continue to engage laboratory staff to improve sustainable practices in their labs.



*Claire Sauvage,
Green Office Assistant
S2 2016 – S1 2017*



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GREEN LABS ACTIVITIES



Eye on Sustainability Online Forum Photo Competition

The Green Labs Program's first activity of the year aimed to raise awareness for the Green Labs online forum through a photo competition



Congratulations to Kerry Roper, from the School of Biological Sciences, for winning the Eye on Sustainability photo competition

In Sustainability Week, Green Labs representatives were invited to attend the Bag It screening during their lunch breaks

bag it
is your life too plastic?



Eye on Sustainability Photo Competition

In 2016, the Green Labs Program trialled the use of an online forum. The forum was created as an interactive medium for Green Labs representatives to communicate and share ideas on sustainability practices in the laboratory. Representatives were invited to test out the Green Labs online forum by posting a sustainability-related photo during the 'Eye on Sustainability' photo competition.

Kerry Roper's photo of her lab's impressive recycling station won the competition. The recycling station includes a co-mingled recycling bin, a specialised polystyrene recycling bin and dedicated paper and cardboard recycling bins, all clearly labelled to ensure that lab users know the correct bin to use. By posting a photo of this sustainability initiative in the forum, Kerry's efforts helped set an example to other representatives on how to implement a successful recycling station in their own labs.

Julia Groening from the Queensland Brain Institute (QBI) posted a photo of environmentally preferred cleaning products used in her lab, such as eco detergent and recycled paper towels. Environmentally preferred cleaning products are becoming more readily available and by posting this photo, Julia was able to provide practical examples and share her knowledge with other representatives.

Sustainability Week: *Bag It* Documentary and Freezer Month

Sustainability Week involved a broad range of activities and events for UQ staff and students, including solar tours, tree planting events and seminars. Green Labs representatives were encouraged to attend the *Bag It* lunchtime documentary screening and to participate in the Green Labs Annual Freezer Month. The *Bag It* film screening aimed to raise awareness and explore the effects of plastic on the environment and human health using the platform of a light-hearted and humorous documentary. It was very well received and inspired many attendees to consider the amount of plastic they use in their laboratories and in their everyday lives.

Given the large energy savings achieved by freezer-based competitions in the past, the Green Labs Program decided to run a Freezer Month competition in September, aligning with the start of Sustainability Week. Freezers and refrigeration equipment are some of the largest energy consumers in UQ laboratories, with a single Ultra-Low Temperature (-80°C) freezer consuming more energy than an average household in a day. However, the energy consumption of these ULTs can be reduced by carrying out regular freezer maintenance.

UQ Diamantina Institute freezer before defrost and clean out

The Green Labs Freezer Month competition gave Green Labs representatives a chilled-out chance to spring clean their freezer and save energy on campus. During Freezer Month, representatives were invited to defrost, clean out, 'chill up', switch off, share freezer space with other labs or set up an inventory for their ULT freezers. Representatives were then asked to post photos of their activities in the Green Labs online forum. Kate Kollar from the Diamantina Institute won the competition by cleaning out and defrosting five of her lab's ULT freezers. Green Labs representative Kerry Roper also won a prize for her efforts. Twice a year, Kerry defrosts four of her lab's freezers in the School of Biological Sciences.

The activity aimed to encourage representatives to undertake freezer maintenance with the incentive of winning some great prizes, and of course end up with a well-organised and energy-efficient freezer. The competition raised awareness about the environmental impacts of ULT freezers and the advantages of a proactive maintenance and management plan.

UQ Diamantina Institute freezer after defrost and clean out

One of four freezers in the School of Biological Sciences before being defrosted by Kerry Roper



GREEN LAB INITIATIVES

Automatic Sash Controllers at AIBN

Alongside the great work initiated by Green Labs representatives, UQ's Energy team has also worked to improve the energy efficiency of UQ laboratories in 2016. Twenty-nine fume cupboard automatic sash controllers were installed on Level 5 of AIBN. Fume cupboards consume a significant amount of energy by pulling air-conditioned and humidity-controlled air out of a lab at a rate of 500 litres per second. Automatic sash controllers operate by using a sensor that has the ability to detect movement under the sash. If the fume

cupboard has been left open for more than 3.5 minutes and is not in use, the sash will automatically close.

These automatic sash controls are expected to lead to large energy savings. Based on analysis of the AIBN project, the Energy team estimates a saving of 3,600 kWh per year per fume cupboard—for the 29 AIBN cupboards, that's equal to the annual energy consumption of over 17 average Australian households.

Automatic sash controls have been installed in AIBN as a strategy to reduce the energy consumption of fume cupboards



Left: Heron Island Research Station laboratory recycling station includes

Right: Green Lab representatives were invited to plant trees at the St Lucia Campus during Sustainability Week.



Left: The School of Biological Sciences is able to give polystyrene, cardboard, paper and co-mingled waste a new life with its impressive recycling station. The recycling station was set up in the laboratory by Green Labs representative Kerry Roper



Laboratory Waste Minimisation Guide

Minimising laboratory waste reduces potential hazards, leading to safer lab conditions, and also reduces environmental impacts by ensuring the efficient use and conservation of resources. This year, a Green Labs Waste Reduction Guide was produced, highlighting three key waste minimisation strategies applicable to labs: source reduction, improvement of waste segregation and good management practices. These strategies consist of simple and inexpensive processes that can help reduce waste generation. The guide also assists in providing clarity around what can and cannot be recycled in labs.

Green Labs representative Sally Stockwell from CSIRO was a key contributor in developing this guide. Sally highlighted the issue of recycling in PC2 labs and shared insights on how she segregates waste before it enters the lab.

Increased awareness of practical waste minimisation concepts will aid in promoting positive behaviour change while reducing the environmental impacts and costs associated with disposing of hazardous waste.



Left: Green Program Representatives attending the Bag It documentary screening



Right: Julia Groening from the QBI has introduced a number of environmentally friendly cleaning products in to her lab



Left: Guided tour of the UQ St Lucia rooftop solar array during Sustainability Week

GREEN LABS UPDATE SESSIONS



Laboratory Waste Management

In March 2016, a number of key figures in waste management at UQ delivered an update session on laboratory waste management. Shai Stadtmiller, the Business Development Coordinator at Suez, spoke to Green Labs representatives about waste management practices at UQ and the waste contractor's responsibilities. Alex Homewood from Ace Waste also spoke about the clinical waste incineration process at the company's Willawong facility. Leigh Burgess, Manager of Cleaning Services at UQ's Property and Facilities Division, spoke about clinical waste procedures at the University, including the volume of clinical waste produced, where that waste is generated and the cost of disposal. Presentations were then followed by a Q&A session covering a number of topics such as perceived clinical waste and the potential opportunities for efficiency improvements.



Green Labs representatives learning about laboratory waste management at UQ



Green Labs representatives at the September update session learning about green chemistry and its role for sustainability

Green Chemistry and its Role for Sustainability

The second update session of 2016 took place in September and provided representatives with a platform for learning about the increasingly important topic of green chemistry and its role for sustainability. The field of green chemistry aims to encourage the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Two UQ experts, Associate Professor Craig Williams from the School of Chemistry and Molecular Biosciences and Senior Lecturer Dr Bronwyn Laycock from the School of Chemical Engineering, spoke at the session.

Dr Laycock briefly presented her current research projects on biopolymer research, carbon nanofiber production and peptide-based conducting nanowires. Dr Williams also discussed his research on strategies for the total synthesis of very complex natural products and discovering new biologically active molecules for use as medicines. Both Dr Laycock and Dr Williams then detailed the ways that green chemistry principles inform decision-making in their respective fields of research and provided examples of where green chemistry is incorporated into their day-to-day laboratory activities.

The session concluded with an interactive Q&A discussion covering a wide range of subjects such as biodegradable plastic bag alternatives, the push for a universal solvent, acetone recycling and surfactant wastage. The session stimulated valuable conversation and helped inform attendees about how to maximise resources and reduce chemical waste through sustainable practices in the lab.





New Green Labs Representative Training

In 2016, the Green Labs Program held two training sessions, welcoming five representatives from across the University. The program extended its reach, with new representatives joining from the Centre for Mined Land Rehabilitation, the Advanced Water Management Centre, the School of Biomedical Sciences, the Australian Institute for Bioengineering and Nanotechnology (Systems & Synthetic Biology) and the National Research Centre for Environmental Toxicology.



New representatives from AIBN and SBMS at the second Green Labs training session of the year



ASSESSMENT RESULTS

Throughout the year, five baseline assessments were completed by new Green Labs representatives. The baseline assessments give representatives the opportunity to gauge environmental performance in their laboratory by surveying a number of categories (see Figure 1). Baseline assessment results have continued to improve, with new labs averaging a score of 84% compared with 75% last year. The Green Labs Program would like to congratulate all Green Labs representatives for their fantastic efforts in completing these baseline assessments and introducing sustainable practices into their labs.

Green Labs Average Component Results 2016

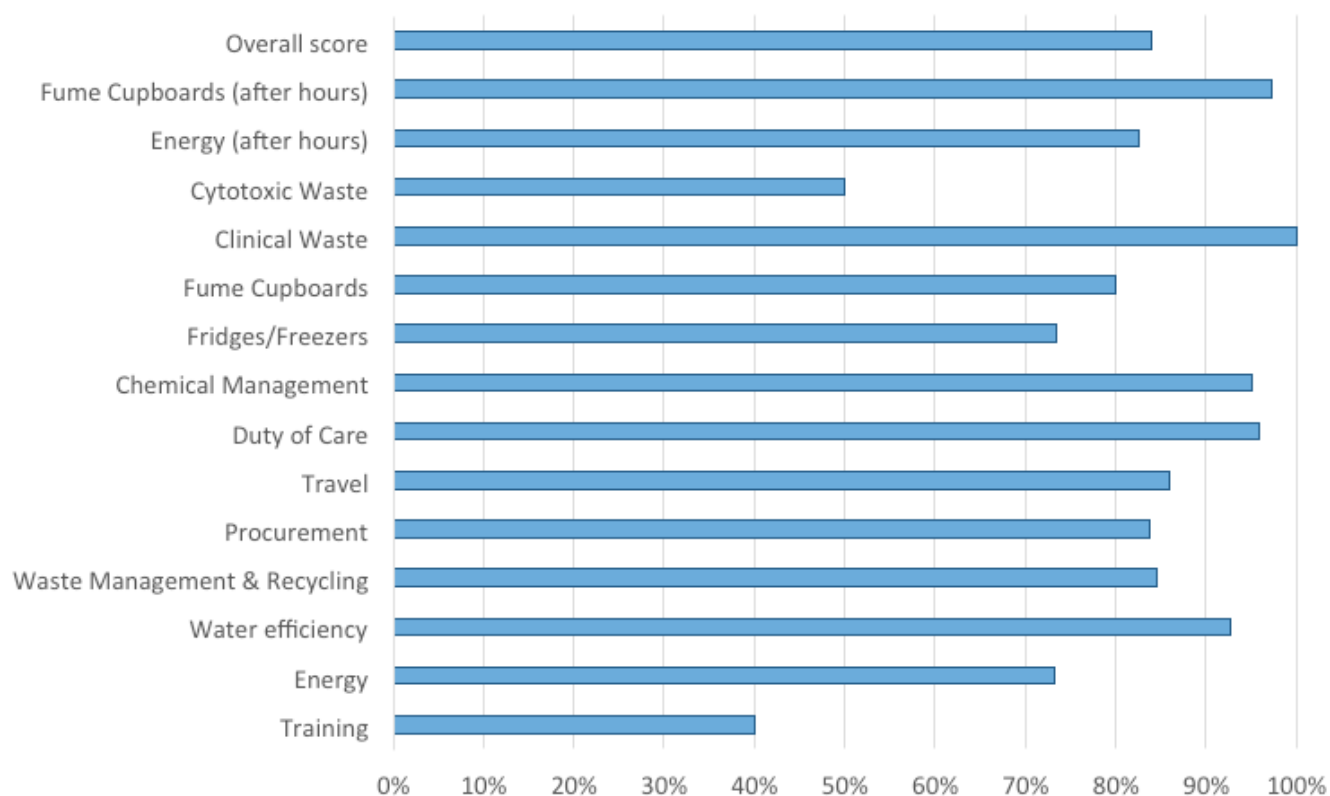


Figure 1. Average component results for all Green Labs assessments conducted in 2016.

SHOWCASING GREENER LABS IN 2016

Kerry Roper – School of Biological Sciences

Kerry is a Senior Research Assistant who joined the Green Labs Program last year, being the first representative to join from the School of Biological Sciences. At a professional level, Kerry enjoys being part of the Green Labs Program because she feels she is contributing to something at UQ that is bigger than just her immediate job. On a personal level, having lived in a number of other countries, Kerry believes that Australians are lagging in their everyday approach to sustainable living and that helping to change people's habits at work is a small step in the right direction.

Kerry has been very active since joining the program: she's attended each update session and won first prize in the online forum photo competition with a photo of her laboratory's recycling station. Kerry also won second prize in the Green Labs Freezer Month competition, defrosting four freezers and making significant energy savings in the process.

Kerry's main goal as a Green Labs representative is to encourage work colleagues to reuse and recycle wherever possible; the recycling station she implemented is a great enabling mechanism for achieving this goal.



Kerry with her fair trade chocolate prize after undertaking her biannual freeze thaw



Aline Dantas de Araujo from the Institute for Molecular Bioscience, QBI

Aline Dantas de Araujo from the Institute of Molecular Bioscience

Aline, a Research Officer from the Institute of Molecular Bioscience, signed up to become a Green Labs representative in June 2015. She joined the program knowing that making small changes in her workplace could reap huge benefits for the environment. Participating in the Green Labs Program has allowed Aline to increase her workplace environmental awareness while encouraging colleagues to implement more sustainable practices. Aline points out, however, that it is often difficult to determine which measures will have the most impact in her laboratory.

When Aline joined the program, her primary concern was to reduce energy waste. The baseline assessment undertaken in her lab revealed that the air conditioning was running 24 hours a day, seven days a week in the northern office spaces on Level 7 of the Queensland Bioscience Precinct (QBP). These office spaces are located adjacent to PC2 labs that require continuous air conditioning to maintain differential pressure. The office spaces, however, did not require continuous air conditioning. The P&F Energy team began trialling reduced air conditioning scheduling in these office areas. The trial generated some amazing results, saving 80,000 kWh annually on Level 7 north alone. Given the success of this trial, air conditioning scheduling was implemented on all

other levels of QBP, saving at least 564,000 kWh per year – equivalent to powering more than 100 average Queensland homes for 12 months!

Aline is also very aware of the energy fume cupboard use in PC2 labs at QBP and the energy wasted when the sash is left open. Since joining the Green Labs Program, she has placed fume cupboard ruler stickers in all of her lab's fume cupboards. Aline says she consistently reminds colleagues to lower the sash when it is not being used and to switch off lights and instruments when they are not in use.

Kate Kollar from the School of Pharmacy

Kate is the Scientific Infrastructure and Safety Coordinator for the School of Pharmacy, located at the Pharmacy Australia Centre of Excellence (PACE). Kate joined the Green Labs Program last year while working at the School of Biomedical Sciences, and has continued to be a Green Labs representative in her new role at the School of Pharmacy.

Kate hopes to learn about all the opportunities to 'green up' a medical research lab. One of Kate's most recent achievements as part of Green Labs Program was her involvement in the Freezer Month competition. She initiated the defrosting and cleaning out of five of her laboratory's ULT freezers. This accomplishment helped improve the energy efficiency of the ULT freezers in the lab. Kate aims to continue to support the Green Labs Program by promoting environmental practices throughout UQ's medical research labs.



*Kate Kollar from the
School of Pharmacy*



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