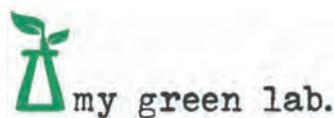


nature  
[ **inside**view ]



Profile Feature as seen in *Nature* October 5th 2017

# THINKING OUTSIDE THE ICEBOX ON LAB SUSTAINABILITY

A conversation with **ALLISON PARADISE**, executive director of My Green Lab



Ultra-low temperature freezers (ULT, -80°C) are one of the most energy-intensive pieces of equipment found in labs. They could be operated more efficiently by implementing simple cold-storage management best practices, yet few researchers invest the time to do so. To reduce the environmental impact of ULTs and other cold storage units, two non-profits — the International Institute for Sustainable-Laboratories (I<sup>2</sup>SL®) and My Green Lab — joined forces to launch the first North American Laboratory Freezer Challenge. Allison Paradise, executive director of My Green Lab, explains how the competition spurred hundreds of labs into action.

**People often don't think about energy consumption in labs. Is it a big deal?**

Absolutely. Typical research university lab buildings consume 40-60% of all energy on campus. Of that, ~25% is due to lab equipment. An average ULT freezer consumes as much energy as a single-family home (~20 kWh/day), and collectively cold storage units (e.g. ULTs, refrigerators, cold rooms) contribute substantially to a lab's energy use. But there's a lot that can be done to reduce the environmental impact of cold storage, including defrosting (~10% energy savings); changing the set point on ULTs to -70°C (~40% savings); purchasing energy-efficient models to replace older units (up to 70% savings); and throwing away unneeded samples to make space in existing units.

**What was the inspiration behind the North American Laboratory Freezer Challenge?**

The idea comes from a competition started by Allen Doyle at the University of California, Davis in 2011. The Green Labs community had been interested in addressing energy consumption of cold storage, and a competition seemed like a great way to do that. The initial competition was quite successful, and subsequent competitions

have taken place in other US labs since then. In 2016 My Green Lab and I<sup>2</sup>SL were approached by Allen and others to expand the program. Given I<sup>2</sup>SL's focus on reducing energy consumption in the design and operation of labs, and My Green Lab's work with scientists and life science manufacturers to reduce energy use, the program was a natural fit.

**What were the results of the Freezer Challenge?**

Over 200 labs from 34 organizations across North America participated this year. Together participants saved an estimated 2.7 million kWh/year and discarded over 200,000 samples.

**Who were the winners?**

We awarded both organizations and individual labs for their work. The organizational winners were Eli Lilly and Company, the Centers for Disease Control and Prevention [CDCP], the University of California, San Diego, and Beth Israel Deaconess Medical Center. The individual lab winners were Thomas Baker's Lab (Eli Lilly and Company), Elemental Analysis Laboratory (CDCP), and Hopi Hoekstra's Lab (Harvard). Winners were determined based on the amount of energy saved and the number of points scored by taking simple actions such as properly maintaining

**UNIVERSITY OF CALIFORNIA, SAN DIEGO'S LABS SAVED 500,000 KWH/YEAR IN THE FREEZER CHALLENGE.**

freezers, adjusting storage temperatures, and retiring and replacing inefficient units. At the University of California, San Diego, for example, 41 labs collectively saved 500,000 kWh/year from participating in the Freezer Challenge. That translates to a \$50,000 savings annually.

**Are there prizes?**

Yes, and this is one of them! People were very excited to have their pictures in Nature. Winners also received a coffee machine and mugs for the lab. And winners will be recognized on October 16th at the 2017 I<sup>2</sup>SL Annual Conference in Boston. The competition and prizes were made possible due to the generosity of our sponsors: Thermo Fisher Scientific, Stirling Ultracold, Panasonic, Dribank Labs, Eli Lilly and Company, and Labcon.

**What do you see as the larger goals of the challenge?**

There are two main goals of the Freezer Challenge. One is simply to raise awareness about the environmental impact of cold-storage. As a former neuroscientist, the truth is I never once thought about

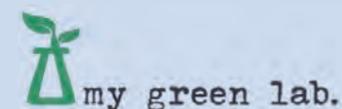
our lab refrigerator or -80°C freezer, aside from making sure it was still functional and my samples were still where I had left them. The intent of the Freezer Challenge has been to educate scientists about the environmental impact of their freezers and how to mitigate that impact. The other goal concerns reducing overhead costs. To be frank, scientists are wasting a lot of money. The money spent on creating, using and operating labs inefficiently – including cold storage – is not sustainable. The more we can do to reduce overhead costs for labs the more resources can be re-directed to research.

**Will there be another Freezer Challenge again next year?**

Yes! In fact, we will be expanding to an international competition next year. Though we had over 200 labs participating in 2017, we hope to inspire over 2,000 labs worldwide to participate in 2018. To find out more information about the Freezer Challenge, or to register for the 2018 Challenge, visit [freezerchallenge.org](http://freezerchallenge.org).



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## AND THE 2017 WINNERS ARE...



Elemental Analysis Laboratory, Centers for Disease Control and Prevention



Eli Lilly and Company & Dr. Thomas Baker



Beth Israel Deaconess Medical Center



The Centers for Disease Control and Prevention Team



Dr. Hopi Hoekstra's Lab, Harvard University



University of California, San Diego

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