240412 Meeting Minutes

Attendees: Kate Malecek, Vijaya Kumar, Genevieve Gandara, Darren Chieng, Cathryn Holmes, Honami Tanaka, James Linton, Stephanie Connon, Tatiana Solovieva, Annie Lam, Ben Ben, Tasha Cammidge, Jaasiel Alvarez

This month, we are ordering food from super yummy (and completely plant-based and vegan!) <u>Donut</u> <u>Friend</u> for this Friday's meeting! <u>In your RSVP</u>, please type in the donut of your choice and drink (including all the fixin's) (no milkshakes or ice cream please– I can't ensure they'll make it here unmelted)! <u>The deadline for submitting your order is Thursday 9am</u>. I can also bring a kettle so we can boil hot water and I will bring some yummy hot chocolate packets and tea bags for folks to enjoy! If you prefer, BYOT. <u>For bonus sustainability</u>: folks can bring their own cups and/or utensils and/or plates as an alternative to our usual compostable ones!

Will update <u>Restaurant Guide</u> (released in October) and our <u>Coffee, Breakfast, and Dessert Guide</u> (posted in December!)

- Food from Donut Friend
 - o Plant-based and vegan restaurant!
 - Delivery fee of \$2.99 to Caltech
 - Boxes are cardboard, they use the plastic stoppers 😕 but lids are recyclable

Introductions ...

Million Advocates for Sustainable Science Petition

- International Institute for Sustainable Laboratories (I2SL) along with My Green Lab are petitioning to change funding granting agency policy to promote sustainable research
- By signing the letter you can help transform how science funding organizations set expectations for efficiency, resiliency, and sustainability in the way scientific research is conducted
- Reached 1000+ signatures!

Green Labs Monthly Tip:

Water Purity and Water Reduction (March was world water month!)

- <u>Did you know</u> it takes 3 gallons of water to make just 1 gallon of deionized (DI) water?
 - Water comes in many shapes and sizes in the lab, ranging from tap water to ultra-pure water.
 - You can help conserve water (and energy!) by using the <u>appropriate grade</u> of <u>purity</u> required for your work.
 - Manufacture of higher purity water requires high pressure pumps and filters, all of which increase the energy consumption, consumables, and wastewater production.
 - These adjustments will also help reduce financial and energy costs for your lab, and you won't have to replace those pesky water filters as often!
- You can reduce your water usage even more by
 - Combining autoclave/steam sterilizer runs
 - Ensuring your autoclave is working properly (ie its solenoid is working properly),

- Take a look at the best practices for your equipment (for example: <u>autoclave/steam</u> <u>sterilizers</u>, <u>glassware washers</u>, <u>fume hood filtration and washdown systems</u>)
- Using waterless condensers rather than single-pass water-cooled condensers

Updates!

- 20 Certified labs!! WHOOOOO
 - Please get CERTIFIED TODAY! To get certified, finish the easy, 30-minute <u>Green Labs</u> <u>Certification</u> and submit it to <u>sustainability@caltech.edu</u>.
 - Certified Labs-exclusive event planned for April!
- Lots of media lately
 - o <u>California Tech Article "Caltech Orange Needs a Hint of Green"</u>
 - o <u>Caltech Weekly Article "Caltech on Path to Decarbonize)</u>
- We should use this energy from the campus to encourage sustainable practices!!

<u>Updates – Pilot Programs</u>

- Lomi Composter Update
 - GSA update...! Composting in the Catalina's
 - BI: Bronner Lab/Imaging Core added
 - 143 kg of dirt (714 kg (or 633 gallons!) food waste)
- Pipette Tip Box Recycling
 - 2538gallons of plastic waste (1121 lbs!) diverted
- -70°C/-80°C Comparison Pilot
 - 5 labs involved, collaborating with NIH
- Styrofoam Recycling
 - Waiting to hear from BBE about space for a 40 yard bin!
 - o <u>Sign the petition</u>!
 - o <u>Technical bulletin from I2SL</u>
 - o <u>LCA of Styrofoam</u>
 - o How to do LCAs
- Resources
 - o <u>Sustainable Restaurant Guide available online</u>
 - o <u>Sustainable Coffee, Breakfast, and Dessert Restaurant Guide</u>!

- Spring Clean Event ongoing

- Spring Clean Event submit your photos now!
- Freezer defrost kit!! updated with magnets, signage etc!
- Tote bags?



• Certification Event – submit by Earth Day!

- 2024 International Freezer Challenge! January 1 July 1, 2024
 - This was the tip last month, but it is worth revisiting!
 - Our lab did the scoresheet in under an hour
 - Opportunity for us to get funding to go to I2SL conference for free.....!!! if we do
 well in the competition, so please sign up and do the challenge, most of us are
 already doing this work so it would be great to get credit for it!
 - Labs compete to improve freezer efficiency, sample accessibility, reduced risks, costsavings, and energy-savings for their lab's cold storage!
 - o Fun, free program
 - Scored on different categories (like defrosting freezers or inventorying)
 - Awards given at I2SL for the winners!
 - Could provide internal prizes also?

- TC is moving the next meeting to May 3 due to a conflict

Social Media Campaign – Jaasiel Alvarez

- Do you have time to <u>film a short video</u> or <u>write a blog post</u> I2SL is asking for videos or blogs, and there is a \$500 stipend available!
- Letters to the editor California Tech (<u>https://tech.caltech.edu/about/</u>)
- JA presented her slides (see Drive for details) and made a case for social media at Caltech
- <u>TC will create a folder in the Drive for this</u> so we can collaborate and make sure we are covering interesting topics
- Organizing April 19th working session!!

GROUP WORKED ON ENGAGEMENT PROGRAM AS DIRECTED BY KATE MALECEK

- KM presented results of initial survey results (from labs that are already Certified)
 - Found that most groups are struggling with education and electricity conservation, so that is where we will focus most of our efforts)
 - o <u>Slides are on the Drive</u>
 - o Found users want to address energy conservation, educate lab members most
 - Found users want to pursue better cold storage management, educate lab members, and also conserve electricity and manage waste and recycling better
 - SC: glove recycling difficult on campus, tried years ago with Kimberly Clark to start a program but didn't take off
 - TC: we might have some funding available if you want to pursue it again? We can chat offline
 - JL: HHMI offers this for free!
 - How can Green Labs help your lab become more sustainable
 - Labs not interested in 1:1 meetings, interesting!
 - Very interested on having events focused on sustainability, having lab signage and fact sheets on sustainability, and also having slides or email templates
 - KM: this is perfect since this is what we are focusing on moving forward, so nice to know these resources are wanted and will be used

- TC: went through Vampire Energy fact sheet
 - Made some mock-ups based on other universities or similarly themed fact sheets
 - Looking for a punchy fact or something, keep it simple
 - Have room for QR codes, so one to direct them to the website, another to direct them to resources
 - Website will also have links for our references, our tables or other data we want to give to the community that may help them
 - Made some paper examples of the sheets, as this one we wanted to be our lynch-pin one (have it be interactive, post it in multiple formats around campus etc) (all versions would be available on the website)
 - Feedback: simpler model is best (the one shown with multiple tabs is not as interesting and is harder to make)
 - Needs more work to be effective...!
 - TC showed the mock-up of the Fact Sheet website, with images of the fact sheet in various forms (linked) and also dropdown menus for references, resources etc.
 - What do we need ot make a good fact sheet?
 - Punchy information fact
 - Good picture
 - Good QR codes
 - More complicated one for information dissemination, but simpler one for hanging in lab spaces
- TC posted two other fact sheets (fume hoods and energy star) as examples, asking for feedback
 - Fume hoods
 - SC: Make a simpler one for sending out
 - KM: change instructions, for eg "don't put your head in"
 - TS: what is the goal, are we instructing people on safety or sustainability
 - CH: Could make two, one focused on safety and one on sustainability
 - JL: reference source for 3.5x homes (could also highlight with black text or something)
 - JL: OR could put the cost of running it
 - TC: worry is that no one will care since BBE pays those costs (they come from their overhead, but folks might not see it that way)
 - KM: could quantify it in lab metrics (grad student salaries or something, how many miniprep columns etc), make it more punchy, highest traffic should have one key fact
 - SC: have a QR code for a more complicated one, but post the simple one and circulate that one via email
 - For shut the sash poster
 - SC: make sure the scale is correct for the sticker
 - SC: make sure when they are installed that the certification line is not covered!
 - Energy Star

- VK: too wordy, could put the facts as bullet points instead, want to update language so it has percentages saved rather than the \$ value per year (since it is not actually that much)
- VK: could make this more like the vampire energy stats, more along the lines of sustainability
 - KM: could compare non-and energy star equipment
- SC: note that freezers can't be purchased with freon in them as of January 1, 2024! So that might not be as useful a metric
- TS: could Caltech subsidize these things?
 - TC: there is a freezer rebate program, could ask Caltech to expand it
 - KM: QR code could refer them to the rebate program
 - JL/Stephanie/KM: discussion of Sterling vs Panasonic, some folks think only Sterling freezers are covered, others think not, question for Max! If Panasonic is not included in the things covered, we should ask for it to be updated
 - KM: projectors?
 - VK: there are imaging and AV systems that are Energy Star related
 - KM: does the energy star rating have end-of-life categories, for eg hazardous waste production at end of life (eg freezers produce lots of hazards as they are recycled like freon)
 - VK: you can search for different categories of products, for freezers there are Global Warming Potential calculations for this, so what is the impact on the environment if, say, refrigerant is released into the environment
 - SC: are there autoclaves energy star rated?
 - VK: did not find any, but this is a good question add it and other questions to the fact sheet doc and VK will look into it
 - VK: also note that fisher, VWR etc catalogues have a checkbox for greener products, including appliances for labs (AKA environmentally safer on one website), also have checkboxes for energy star ratings
 - SC: will be researching autoclaves soon, so will keep the group updated
 - TS/SC: are there differences between the building-steam connected ones and the independent-steam ones?
 - TC: would be interesting to compare, if you do research please add to the site and we can add a dropdown menu for that
- Will book a room April 19th for continuing work on this, and for social media posts!
- TC sent out fact sheets for feedback to attendees for further feedback
- <u>Please work on these over the next few weeks and we'll try to have some more</u> <u>created by next meeting May 3!!</u>

For next time

- Certification
 - Takes ½ hour
 - Very simple!
 - See <u>https://greenlabs.caltech.edu</u> for the form
 - Get a plaque!
 - Green Labs will give you bins and signage for your lab!
 - Only for Green Labs Certified labs
 - Stickers
 - Can order stickers through us and we will print them and drop them off!
 - Three sizes (but fully customizable) and three colours/messages (1", 1.5", 2")
 - Help encourage behavioural changes
 - Recycling bins
 - "slim jim" style

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- Photos!
- Work on Action Plan
- Anything Else?

Working meeting April 19th – working on social media posts and fact sheets!! Next Meeting May 3rd 12pm-1:30pm Chen 240 Bring a friend and get a RocketBook!

(NOTES FROM LAST MEETING BELOW)

<u>Reengagement Project – Kate Malecek (slides and resources posted to the Drive under Certified Green</u> <u>Labs Engagement and Fact Sheet Coordination</u>)

- Update the Certification form
- Efforts to reengage labs that are already Certified and improve their score, check in, see if they are keeping up with sustainable changes, what are they working on now etc
- Made docs we can collaborate on to create fact sheets
- Made some mock-ups of fact sheets
 - Can have a lot of fun with them!

From KM's slides:

- KM: the current Green Labs Certification program is managed by MC, under sustainability office, we have done a lot to promote it, some labs have had them for a year, moving forward we want to think about it more, we want to think of it in a new way, want to engage labs that have

participate previously, want to survey and engage them and build them up for the future, want this plaque to mean something moving forward and to support them and mobilize them for things we and they need, provide more examples of real world real lab solutions

Survey

Check in about ongoing practices

Provide support and learn about obstacles

Use a survey to identify areas for progress that labs are motivated to pursue

- KM: survey of GL Certified labs as a way to increase engagement of those labs, also see which modules they can grow into or specific areas where we can give them a badge that they work towards a particular goal in 2024, then the plaque becomes a living document to these green practices, can continue to add notches to their belt to promote sustainable lab practices
- KM: with the survey we want to check in about their practices, how is their lab doing, who is working with them, who is an obstacle, can we provide additional support, also want to use the survey they want to move forward into working naturally with the modules
- KM: I went through the scorecards and looked at areas that labs were doing well and areas are doing not so well, common areas that we have developed resources for like green procurement (tip refills, bio gloves), cold storage (difficult to take on because of huge institutional memory and PI s have strong opinions on this), so we can add those to the survey and see how we can help labs do better
- KM: on second page of the survey want to add "what did GL do?" Gets folks thinking of what we did and what they have done last year. All of these things will be highlighted
 - 12 monthly meetings
 - Sustainable Dining guide
 - Sustainable Coffee and Tea guide
 - Lomi composting in BBE kitchens yield
 - Pipette tip box recycling with vendors yield
 - Lightning Talks event for Pilot Program Proposal
 - Event with WiBBE
 - Visit to a diagnostic lab with a pipet tip washer
 - New certified Green Labs! count
 - -

Modules

Direct the resources that we have developed in the past year to individuals who are poised to use them effectively

Generate ongoing attention to the certified status plaques

Generate real lab accounts of approaching and working through different sustainability issues

- PURCHASING may include
 - using tip refill inserts in reused tip boxes
 - o choosing items with low waste packaging
 - o using biodegradable gloves
 - o consolidating orders to reduce shipments
- COLD STORAGE may include
 - maintaining fridge and freezer inventories
 - using high density storage boxes and racks

- consolidating into fewer freezer racks when possible with regular clean out of unneeded samples or expired reagents
- performing preventative maintenance (de-icing, brushing, and filter cleaning)
- RECYCLING & WASTE may include
 - o efforts to divert landfill waste to recycling or reuse
 - engaging vendors about their packaging, including taking back Styrofoam or cold packs
 - o donating lab supplies that are no longer needed to others
- ENERGY CONSERVATION may include
 - o efforts to estimate energy use
 - o promoting powering off unnecessary equipment
 - investing in Energy Star appliances
 - closing fume hood sashes when not in use
 - switching ULT freezers from -80C to -70C
- EDUCATION OF LAB may include
 - o incorporating sustainability information and guidelines into lab training
 - promoting compliance with your lab's existing sustainable practices with signage and announcements
 - engaging with sustainable programming at Caltech, or Green Labs Group programs!
- OTHER may include
 - Describe another way in which your lab has addressed sustainability

Future initiatives

Create awareness about issues that may require broader mobilization to address - such as recycling transparency or Styrofoam recovery

Conversation re modules:

- WW: want to talk to PIs, have them talk about sustainability as a goal, if we as grad students, our targets are research, concerns of taking time away from research, should not be primary focus, if they can get the idea and push from up to downwards would be easy
 - KM: what do you mean?
 - reply to KM: gloves and purchasing decisions come from PIs and education and how to use instrument and preserve energy, changing from -70 to -80, PIS have more say those decisions
 - KM: true that the PIs are responsible for the people in their labs, but most labs PIs don't care where you buy tips or if you organize freezer, lab managers do, PIs don't have time don't care,
 - WW reply: in some labs PIs are responsible
 - KM: some PIs are responsible but can still mobilize staff and students, it is their immediate space and they care
 - WW: need better incentive is that we say we are saying to be more energy savings, increasing productivity, if you can convince them of increased productivity energy and costs are not important, but productivity is important)
 - KM: you can find samples faster in a cleaner freezer, can build that in, people may answer that on the survey, being wasteful is making us more productive, lab meeting

slides that show that and will target the PIs, but hesitate that they are the major pull, have to have them convinced and supportive,

- WW: if the PIS don't care the culture nothing will change
- KM: lab managers make purchases and maintain the spaces etc, grad students are busy but still believe that things can be better but PIs don't, PIs should be part of it but no PIs submitted a certification, trainees and staff did),
- TC: when we talk to the PIs we will be sure to change the language to make it more convincing to them, the work we do and the resources we make are mostly targeted to lab managers, grad students etc, but when we do talk to PIs I agree the messaging is different, perhaps WW can provide feedback on what they think their PI will take more seriously? We can go over slides together?
- TC: also, note that labs do NOT have to adopt sustainable practices like tip washing if labs don't want to no one is forcing them! We want to make it easy for labs to participate and for it to not impact their workflows at all, so for example, the tip box recycling program adds no time to anyone's day (except the person who brings it down to the recycling bins, which takes less than 5 mins a month for me), you are either throwing the boxes in the recycling bin in your lab or into a garbage bin in your lab, so this action does not impact productivity
- JA: (directed to WW) from a grad students perspective, what would incentivise more PIs to care?
 - WW: from a GS standpoint is how you can conveniently act green, how does that help, for example tip washing, if you switch from using brand new boxed tips to washed tips, but have to fill in the tips manually that will take time in that case you have to do that work
 - JA: could present a built-in process, manual tip stuff is a pain, we can say we want to change the behaviour, idea of using the tips and re-racking by hand, the current idea is that the machine will do that (re-rack the tips for you, so no extra labor burden on labs)
 - WW: going to be friction because you are changing the protocol, not good if you are introducing something new, unless there is a good reason to change it, challenging
 - HT: another GS perspective, a lot of people do care about sustainability and won't go out of their way, but if given the choice between a sustainable option and not most will choose sustainable choices, we in our lab have a great lab manager, and we are given that option, and also for composting a lot of people aren't aware but I can remind people, you can make a choice to compost they do
 - Yvette: My PI is very indifferent to these options
 - KM: tip washer is biggest ask, time to do something about the waste that does not cause such upheaval in your lab, can still do smaller actions that have a big impact if they are not convinced by the data from the tip washers
- KM: getting back to the module program and they survey, we want to gather more information on the ground like how are their initiatives going, currently GL is providing a lot of resources and don't know what their impact is, need to reengage them,

- WW: education ground is hardest, I am the GL rep in our lab, TBH don't have that much time to educate everyone in the lab, need to find 5 min video that could educate them
- TC: we can work on that, making it more accessible for folks
- KM: want help drafting slides, fact sheets, emails, we can put resources into templates to start the conversations and that will help with education,
- KM: first idea is to send out the survey, then break up the work, maybe there will need to be fewer modules, subgroups responsible for all the modules are ready to go, take on a little bit at a time, links, pictures etc to make the module, the goal is to be done at end of spring, push for Earth month (could be later)
- KM: want to talk about the stickers, they have to look good to be motivated, might be an area where we engage Sami who did the logo, the plaque does not have the logo, so our stickers have the logo so it is associated with the group
 - TS: make it a game, have an additional plaque with punches in the scorecard
 - KM: very open to that design, makes it more interactive,
- JA: punch card starts clean slate that lasts a longer period of time, stickers have the year that you achieved the goal
 - KM: aligns with tickers on the plaque, at Huntington you get stickers when you sign the updated the policies, signal that they have signed the handbook etc, durability, very strong visual impression,
- KM: how do we prove that they have done it? write-up with a paragraph what did you do, how did you decide to do it, what difference did it make, plans to maintain etc
 - WW: add photos if they want
 - KM: documentation, first person account, adds weight to the accomplishment
 - CR: incentivise people to be involved
 - KM: right, give a number of that gives people accountability
- TC: Do we want to divvy up the work a little and choose a focus for next time? Could make it a working meeting?
 - TC: I am interested in the vampire energy fact sheet, found some cute resources, could customize it to be for labs, found cute ones other groups did with vampires and their capes
 - HT: could we make them fold?
 - TC: YES super cute, could have them on tables etc around BBE
 - WW and JA: interested in writing for newspaper
 - JA : interested in incorporating videos to the fact sheets, for example we could do one for green purchasing, could have a 30 second video, or how to make sure your products are sustainable, what that looks like on TechMart, in addition to the fact sheet, link the QR code on the sheet
 - KM: want to graduate the fact sheets to training for Green practices, tied to the flip book
 - KM: green purchasing is easiest to achieve
 - WW: but education is hardest
 - YGF: Cold storage management is hardest, facilities have cold storage management, she even has templates to minimize the opening of freezers, she thaws the -20s every year, those are the things we need to target, are feasible, should do it anyway for

organization, align with research goals, when it is breaking down you can pull out the highest priority ,

- KM: could write a lab manager testimonial about preventative maintenance, put together the things that Yvette manages she has templates and
- KM: recycling and waste management have the most resources already, not a lot we can do to change the system,
 - JA could do some public shaming, put data on the blue bins
 - TS: we don't want it to be confrontational or discouraging, hard to commit later on if policies change
 - YGF: not had success being publicly shameful, want it to be non-confrontational and collaborative, won't get anything done otherwise,
 - TC: we have established trust so we should use that, make it more collaborative and supportive (like this is how it is now, but in the future we can change it to this! Or highlighting the work GL has already done to divert etc)
 - KM: styrofoam or plastics recycling programs are good but can't change how we interact with vendors, this is something to work on for future
- Electricity conservation
 - TC: this year we want to get going on shut the sash initiatives
 - KM: ordering power meters that labs can borrow for their lab to estimate their kWh and costs, make an instruction fact sheet
 - KM: if James was here he could talk about the -70/-80 project, could focus on that also
- Education of lab members
 - WW: Group meeting announcement slides, fact sheets easy to print out
 - KM: Would 1 on 1 meetings be effective?
 - Can develop fact sheets, signage, slides etc, and work to graduate the fact sheets to training for GL practitioners

Fume Hoods

- Consume 3.5x as much energy as a house
- Many examples of things like 6 foot long fume hood in a tiny room!
- Sash intelligence reduces energy use by 75% and is safer for users
 - Automatic closures and alarms
 - Sticker indicators



