



We support the Sustainable Development Goals

# Exploring Sustainable Lab Programs

February 24, 2022

# Agenda



- Introductions
- Overview of Big Ten Sustainable Labs Programs – Lydia Vandenberg, Penn State
- Lab Certification Programs: 3 models
- Q&A/Discussion

# Introductions



Ken Keeler  
Senior Sustainability  
Representative  
Office of Campus  
Sustainability  
Facilities and Operations



Tim Lindstrom  
Office of Sustainability  
Intern Manager  
Nelson Institute for  
Environmental Studies



Nick Ciano  
Sustainability Program  
Coordinator  
UAB Sustainability



## Overview

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- Reviewed NSF's listing of top 23 research universities (2020)
- 18 of 23 had sustainable lab programs
- 10 of the 18 are self-assessment programs
- Of the Big Ten, three have programs at this time

# Engagement Strategies

Awareness

Lab self-  
assessment  
(honor system)

Lab self-  
assessment  
+ expert  
review



# Big Ten and Friends

## Sustainable Labs

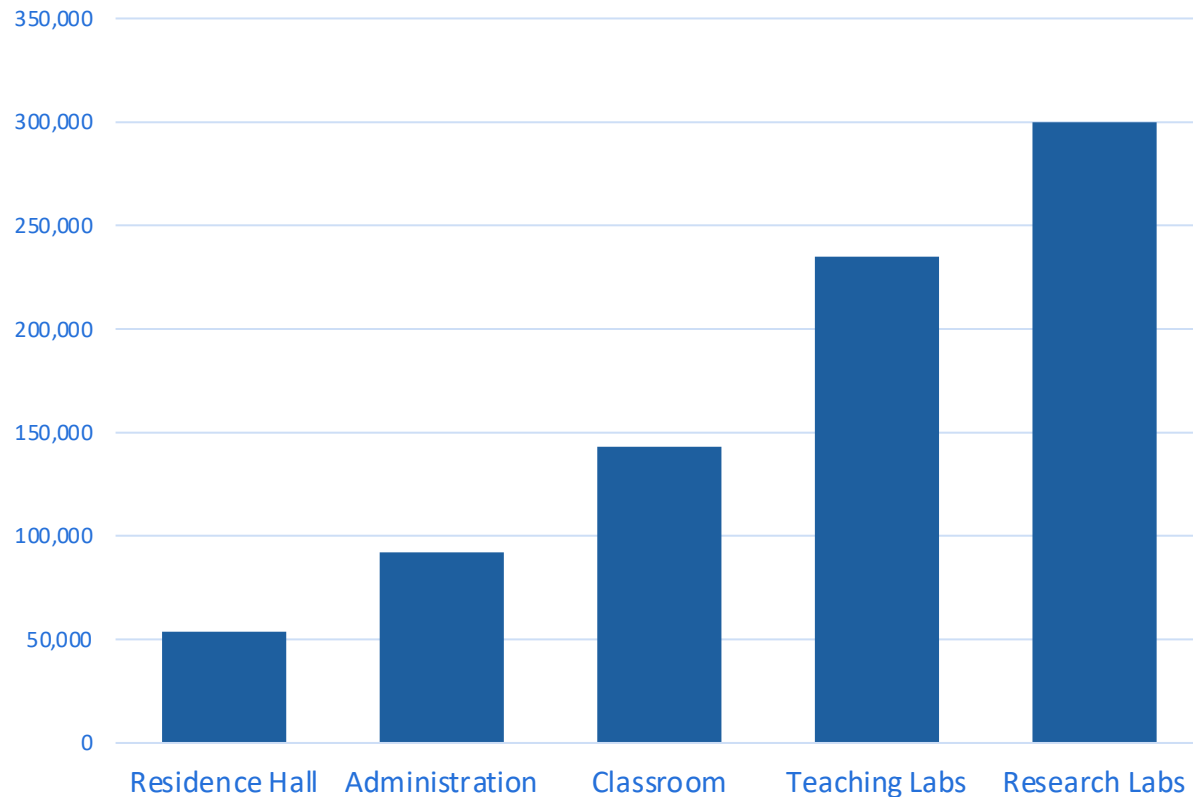


Ken Keeler  
Nicole Berg

University of Michigan

# University of Michigan

BTU/ft<sup>2</sup> by Building Type



- **1.6 billion in research dollars annually**
- **48,000 Students**
- **380 buildings >38 million SFT**
- **2.7 million square feet of lab space**
- **Umpteen hundreds of ULT Freezers and Fume Hoods**



# Program History

Program Launched 2011  
More Than 200 Labs Certified

## Strong Advocate

PhD Chemist  
Energy and Waste Reduction  
Green Chemistry  
Lab Safety





# Process – The Early Days

## Dedicated FTE

Program Promotion

Lab Visit – Detailed Questionnaire

Lab Audit

Follow Up

Certification

Web Page Recognition



**Governor Snyder, Mary Sue Coleman, and Sudhakar Reddy**

*Photograph by Adam Schnitzer of The Michigan Daily*

# Process – 30 Question google Form



## Energy Reduction

Turn of equipment when not in use  
Fume hood use  
ULT Freezers



## Waste Reduction

Recycling opportunities  
Regulated waste collection



## Green Chemistry

Mercury elimination  
Ethidium Bromide substitution



## Best Practices

Lab Safety  
Planet Blue Ambassadors

# Process – Streamlined

Lab Visit  
Follow Up  
Certification  
Web Page Recognition



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 Sustainable Lab

 Level: Gold

 Medical Science Unit II

 Medical School

## Anatomy Teaching Laboratory

Date Certified: October 25, 2017

### Description

Ours is a medical school teaching lab engaged in teaching anatomical science education for undergraduate, graduate, residents, medical and dental students. We teach well over 1000 students per year. Medical instruments are used to dissect cadaveric specimens placed on surgical tables.



## Challenges

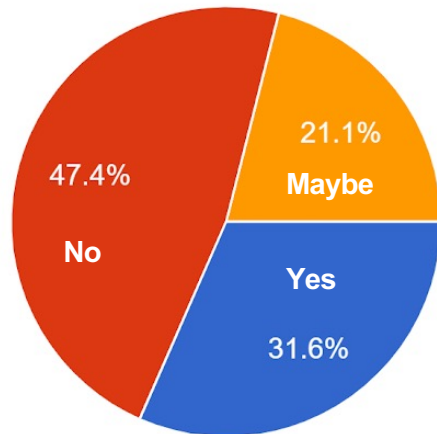
Staying in touch  
Keeping things exciting

Staff time  
Prioritizing “Best bang for the buck”

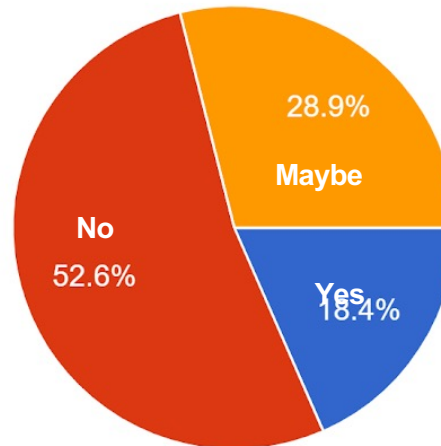
COVID

# Reaching Out

Would you be interested **in another lab walk-thru** with a member of our team during the 2021-2022 academic year to identify new sustainable opportunities (or gain higher certification)?



Would you be interested in hearing more about **non-lab sustainability opportunities** in your building, such as composting or sustainable office information?



Other Initiatives interested in:

- Ice Pack Reuse Program
- Packaging Waste Guidelines
- Lab supply “swap” shelves in building
- Paper Recycling in lab
- ChEM Reuse Program

# Successes

Mercury Elimination

Ethidium Bromide Substitution

Pipet Tip Box Recycling

Ice Pack Recycling

Water Purification Cartridge Recycling

ChEM Reuse Program

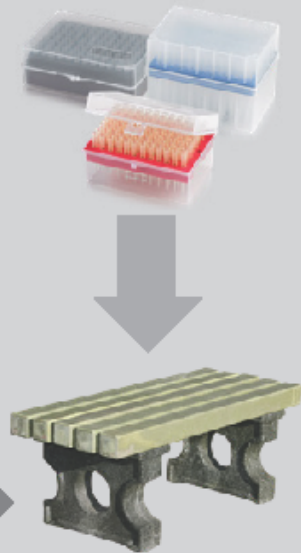
## Pipet Tip Box Recycling Program

Your effort supports U-M's waste reduction goal:  
Reduce landfill waste by 40% by 2025



Easily recycle empty pipet tip boxes and inserts of  
**ANY BRAND—for FREE!**

1. Contact [sustainable-labs@umich.edu](mailto:sustainable-labs@umich.edu) for a new or replacement collection box, which will be delivered to your building's loading dock.
2. Place decontaminated #5 plastic boxes and inserts in the box.
3. When the box is full, call UPS or put the box in pickup location on dock for FREE pickup.



Boxes are recycled into pellets that are then used to make park benches and other items of a similar material.

This program is endorsed by the University of Michigan Office of Campus Sustainability and Procurement Services.



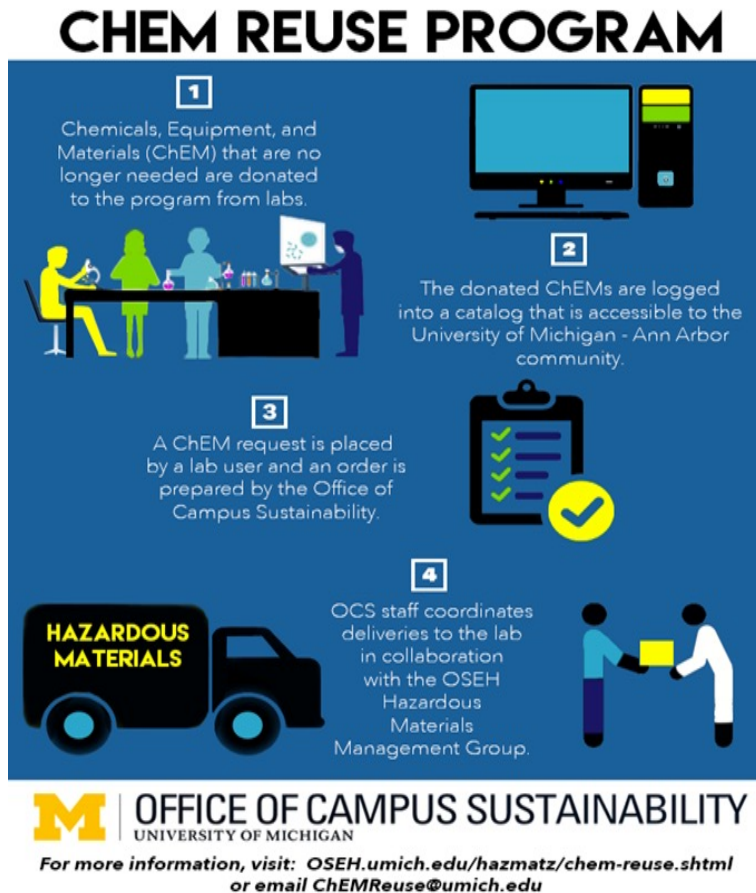
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# Spotlight – ChEM Reuse



- 2000 lbs + rehomed annually
- \$12K to 60K+ worth if items rehomed annually (Over \$700K in the last 10 years)
- 60+ labs participate annually



# Thank you!

[OCS\\_contact@umich.edu](mailto:OCS_contact@umich.edu)



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**WISCONSIN**  
UNIVERSITY OF WISCONSIN-MADISON

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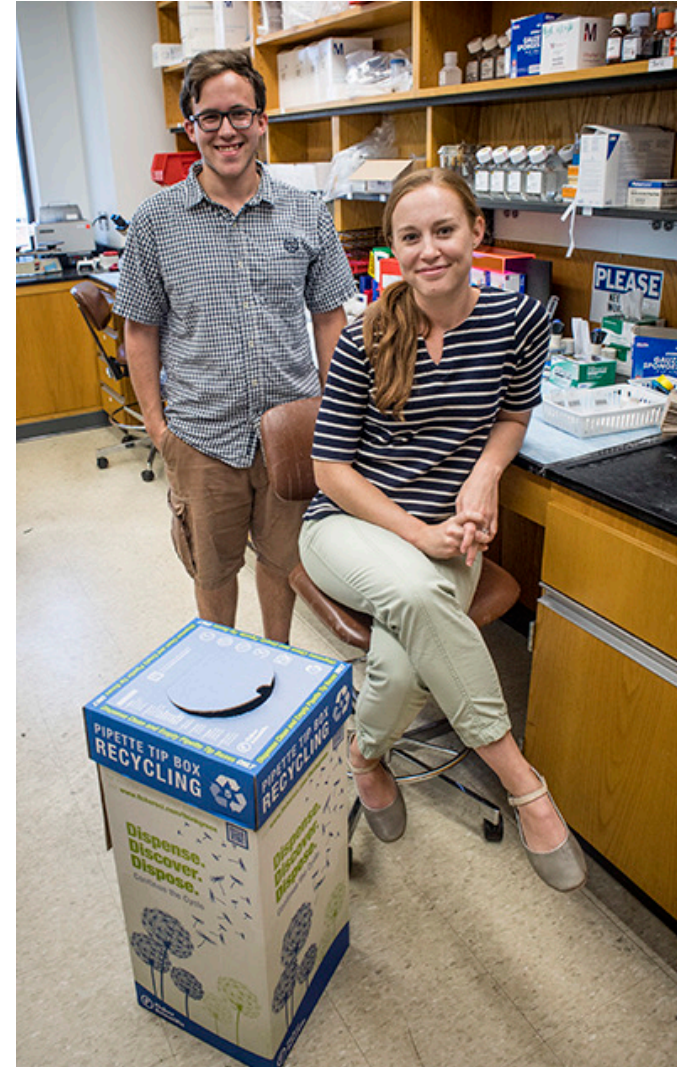
Tim Lindstrom  
Office of Sustainability Intern Manager  
Nelson Institute for Environmental Studies

# UAB GREEN LABS PROGRAM



# WHAT IS UAB GREEN LABS?

- Sustainability program dedicated to reducing energy consumption, waste generation, and water usage without compromising research integrity.
- First Green Labs Program in the state, one of the largest in the country.



# GREEN LABS HISTORY

- Partnered with My Green Lab in 2016 to start a pilot program.
- My Green Lab developed presentations from surveys, UAB Green Labs presented to participating labs.

## UAB Green Labs Program: Lunch and Learn

Nov 1, 2016, 11:30am-1pm at SHPB room 640

Sign up at <http://www.uab.edu/sustainability/greenlabs>

### What is UAB Green Lab Pilot Program?

**This is a new voluntary program**, launched by UAB Sustainability in partnership with UAB Occupational Health and Safety (OH&S), for the fiscal year 2016-2017. This program is designed to work with principal investigators/researchers to implement sustainable practices and technologies in their research labs without compromising research integrity or safety. The program will have a generalized set of guidelines, with an option to innovate and evolve into additional practices based on the individual's unique set of circumstances (more info: <http://www.uab.edu/sustainability/greenlabs>).

# MY GREEN LAB PLATFORM

- Provides a platform for researchers to complete surveys and auto-generates reports & presentations.
  - “Turn-key” approach to engaging with laboratories interested in sustainability.

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# PARTICIPATING IN THE PROGRAM

- Half of a lab completes a survey.
- Lab undergoes a presentation with recommendations.
- Labs implement recommended changes.
- Eligible to participate in:





# PROGRAM IMPACTS

- Divert over 75,000 pounds of waste from landfill through the lab recycling program.
- Conserve of 62 homes worth of energy in one year in a building-wide pilot program.
- Changed the temperature set-point of roughly 5-10% of the freezers on campus.
- Enroll over 150 laboratories into the Green Labs Program.

# RESOURCES FOR OTHER INITIATIVES

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- Autoclave Replacement Study
- Animal Bedding Composting
- Freezer Replacement Program
- Fume Hood Retrofit Initiative
- Expansion of lab recycling program
- Freezer Maintenance Program

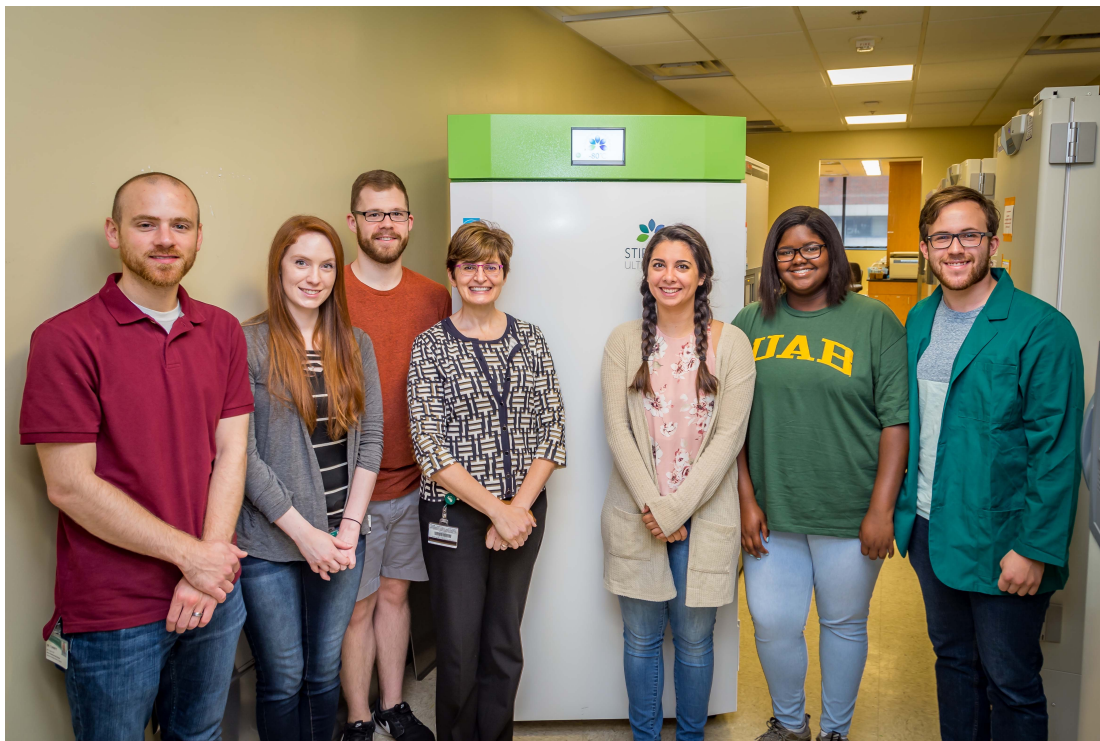
# PROGRAM RECOGNITION

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- In 2021, UAB Green Labs was awarded the International Laboratory Freezer Challenge award for Overall Academic Institution Winner.
- This award was competed against internationally, which UAB won with the participation of 34 labs.
- UAB Labs conserved the energy equivalency of powering 32 homes in one year (~\$25,000/year).



# QUESTIONS?



# CONTACT INFORMATION:

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Sustainability Program Coordinator



Questions