Green Labs Austria-A Network Supporting Sustainable Research

November 3, 2020

Logan Hodgskiss

Outline

- Who are we?
- What are we doing?
- What do we hope to accomplish?

Who are we? How did we start?

- PhD students and post docs
- Lab groups in the Department of Functional and Evolutionary Ecology:
  - Shared lab space
- Wanted to make our working space more sustainable

How did we start?

Primary Goals:

1.) Identify and implement more sustainable lab practices.

2.) Connect with other labs to **share and learn** sustainable practices.

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How do we become more sustainable?

What are we doing?

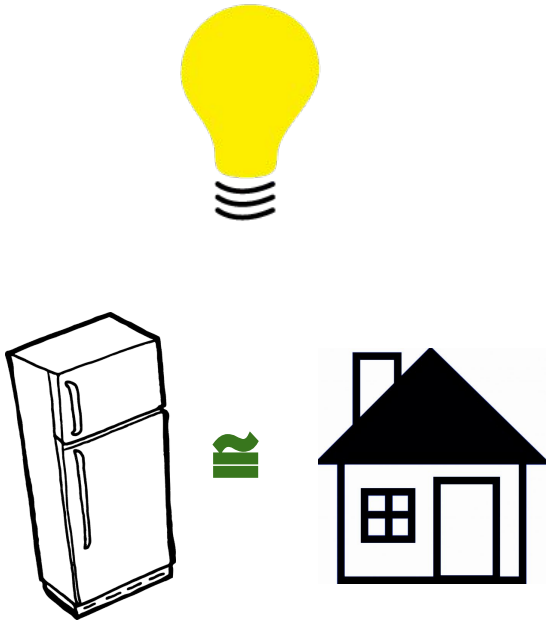
How do we become more sustainable?

Electricity

Consumables

-80°C Freezers

-80°C Freezers



*90-120 m^2 flat in Vienna (Sara Ghaemi and Guenther Brauner, 2009)

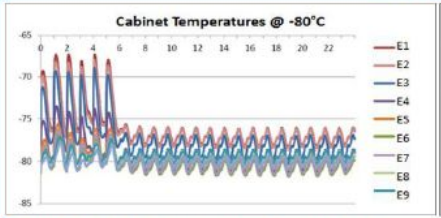
Thermo SCIENTIFIC

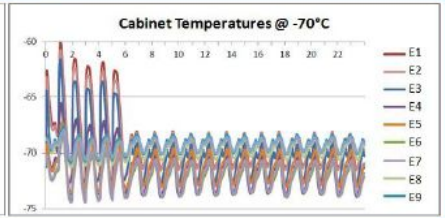
Energy Star Test Results

Thermo Fisher Scientific, Asheville, North Carolina

Unit Description		Model Number Applies to models: UxF60086D, TSU600D, HFU600TD, 88600D
Unit Type		ULT
Cabinet Storage Volume		815 liters / 28.8 cu. ft., 600 Standard 2" Boxes
Installed Accessories		none
Testing Environment*		
Ambient (dry bulb)	T_A	23.7°C
	T_B	23.1°C
Ambient (wet bulb)	T_A	18.1°C
	T_B	17.9°C
Performance Testing		
Test Condition		-80°C / -70°C
Cabinet Average	24Hr Average	-79.3°C / -70.6°C
	DO Interval	
	Steady State Interval	-79.9°C / -71.2°C
Uniformity	Test Uniformity Average	6.8°C / 5.9°C
	1st 3Hr Interval	8.4°C / 7.0°C
	2nd 3Hr Interval	5.2°C / 4.8°C
Stability	Test Stability Average	2.8°C / 5.8°C
	1st 3Hr Interval	4.8°C / 6.5°C
	2nd 3Hr Interval	0.8°C / 5.0°C
Max Cabinet Temperatures	1st 3Hr Interval	-65.4°C / -60.3°C
	2nd 3Hr Interval	-76.7°C / -66.1°C
Min Cabinet Temperatures	1st 3Hr Interval	-82.5°C / -75.7°C
	2nd 3Hr Interval	-82.5°C / -76.5°C
Peak Variation	1st 3Hr Interval	17.1°C / 15.4°C
	2nd 3Hr Interval	5.8°C / 10.4°C
Power Factor**	24Hr Average	
Energy Consumption	24Hr Test Period	20.0 kW-hr/day / 13.8 kW-hr/day
	Steady State Interval	19.0 kW-hr/day / 12.6 kW-hr/day
Weighted Average Calculated		
Energy @ -75°C	Steady State Interval	15.4 kW-hr/day

Performance Graphs





* Values reported reflect the averages over the entire 24-hr test period.
**Value reported is the average mesaured during compressor(s) "on" periods over the duration of the test.

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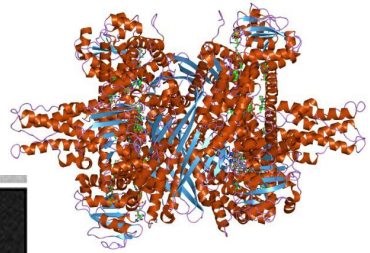
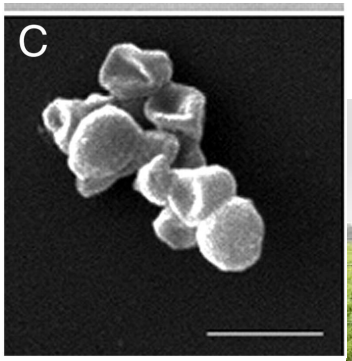
-31% Energy Consumption

500€ per Freezer/ Year

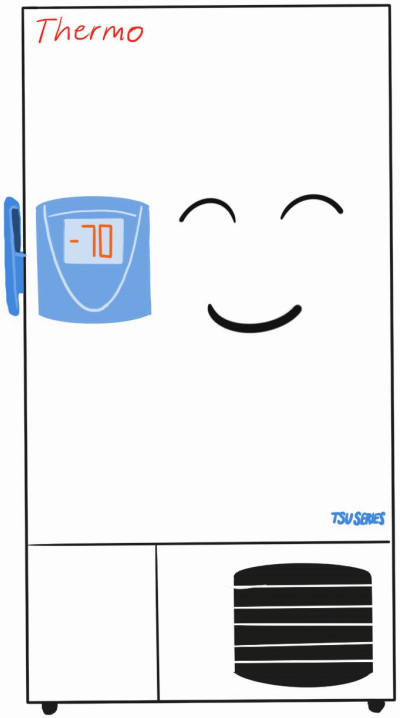
What do we store at -80°C?

- Reactor samples
- Extracted RNA
- Cell lines
- Extracted Proteins
- Soil samples
- Water samples
- Enzyme kits
- Rumen fluid





N. viennensis (Tourna, et al. 2011)



-31% Energy Consumption
500€ per Freezer/ Year

How do we become more sustainable?

Electricity

Consumables

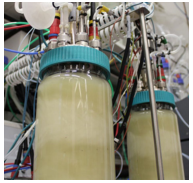
Plastic Consumption

How much do we go through in a week?

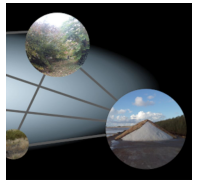
How much?

What kind?

Can it be replaced or recycled?



Rittmann Group



Sousa Group

Bulgheresi Group

How much?

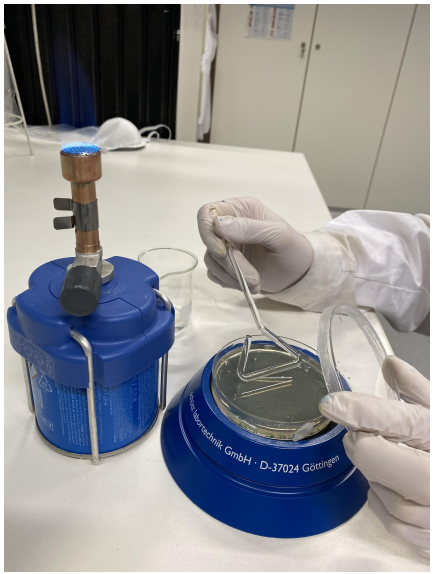
What kind?

Can it be replaced or recycled?

*Waste from 12 scientists over 4 days.

What plastic can be REPLACED?

*Can be replaced with re-usable glass plate spreaders.



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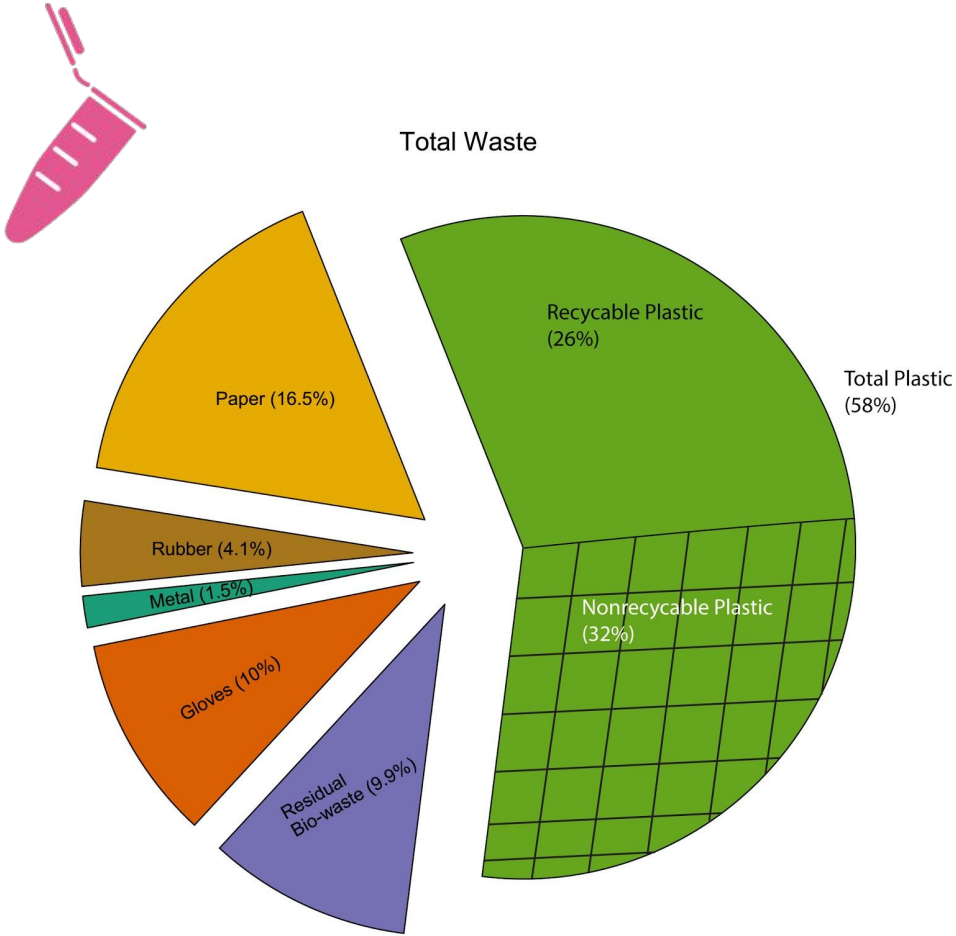
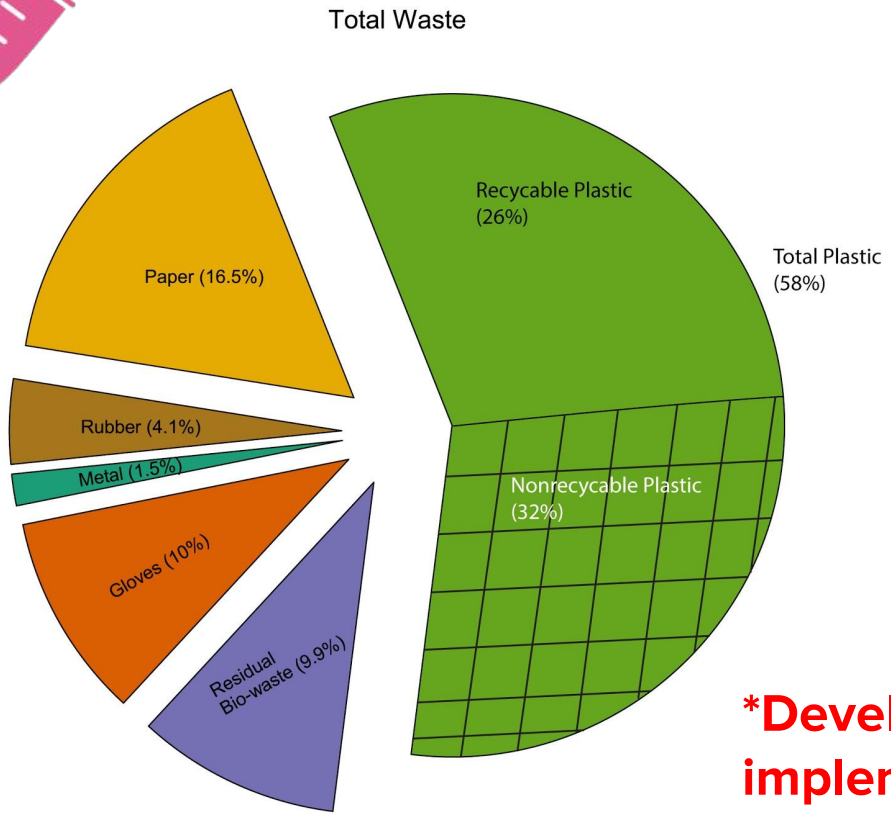


24 kg of Plastic

11 kg are recyclable (45.8%)

With 25 people in the lab that equals 600 kg of Plastic/ Year



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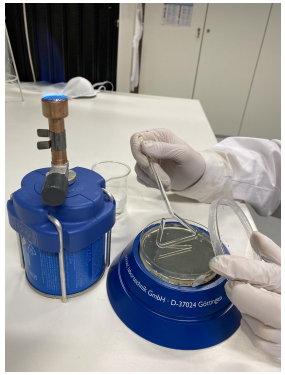
***Developing a recycling pipeline to implement in the lab.**

Plastic Overview

Replace unnecessary plastic consumables.



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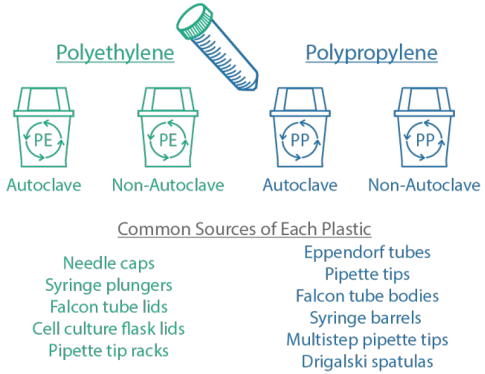
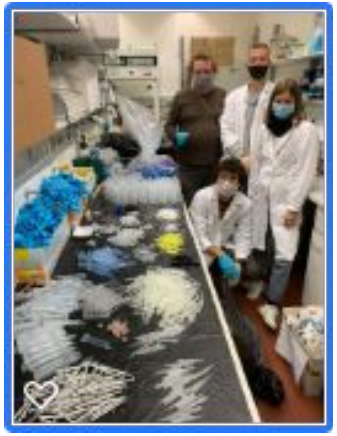
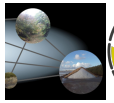
Identifying → Collecting → Recycling



Coordinating Plastic Recycling





Working on a plastic recycling pipeline to share on our website.

How do we become more sustainable?

Electricity

Consumables

Formation of Green Labs Austria

1. We learned a lot during these processes
2. We wanted to share what we learned
3. We wanted to connect other like minded labs

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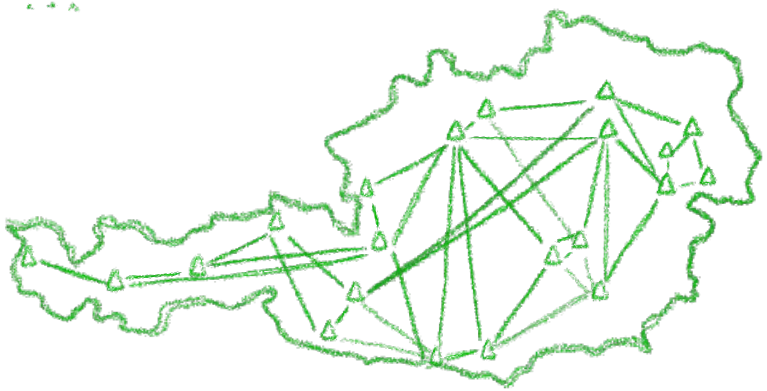
Therefore...

What we Hope to Accomplish

Learning from each other ...



... a bottom up approach

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How do we do this?

- Created a website

www.greenlabsaustria.at

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GLA INTERNAL ABOUT US BLOG RESOURCES LABS FORUM

Our Newest Members

Microbial Oceanography Vienna

Herndl and Baltar Group

University of Vienna

Environmental Cell Biology

Bulgheresi Group

University of Vienna

Archaea Biology and Ecogenomics VIENNA

Schleper Group

University of Vienna

Rittmann Group

University of Vienna

← →

ALL GREEN LABS

*Labs that want to be a part of creating a more sustainable lab culture.

Herndl and Baltar Group

University of Vienna

Microbial Oceanography and Marine Biology

Department:
LABS, UNIVERSITY OF VIENNA

Who we are

We are studying the interaction of the marine biota with the environment, specifically the composition and activity of microbial communities and the transformation of the organic and inorganic matter from the coastal marine waters to the open ocean mediated by microbes.

Why/How are we going Green

Marine plastics and their impact on the biota is one of the research areas we have been addressing over the past three years. About 8-10 million tons of plastics are entering the oceans annually. At the same time we are wasting large amounts of resources while doing ecological research. We feel that there is a tremendous potential to use the available resources more carefully and foster developments towards a circular economy. This is an ambitious plan but we can start in our intimate surrounding – the labs and offices.

Latest Articles

GREEN INITIATIVES

Introducing Green Labs FEE

In 2019, a handful of junior scientists at the Department of Functional and Evolutionary Ecology (FEE) were inspired by the Fridays For Future movement and decided to act.

SUSTAINABILITY

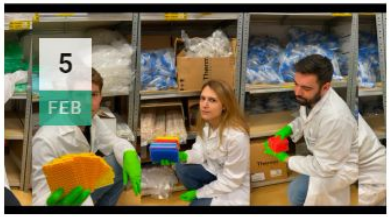
How "Greta" are the Austrian Universities?

We went through the websites of all of the 22 universities in Austria and defined criteria for which they could earn “green points”.

ENVIRONMENT

Happily chilled: How cold is cold enough?

We raised the temperature to -70°C and began saving energy.

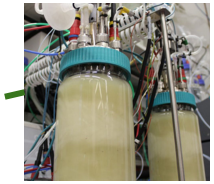


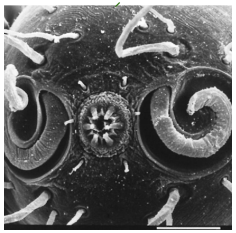
RECYCLING

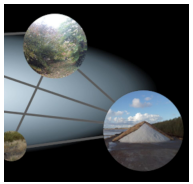
How we got started to recycle plastic in our lab

Plastic products are an integral part of our everyday life. As the majority of plastic is produced from fossil hydrocarbons,...

Why does joining GLA matter?







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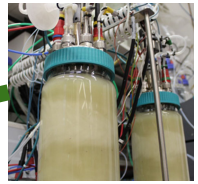
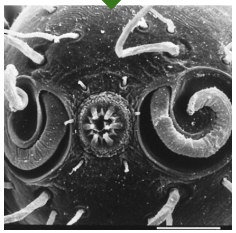
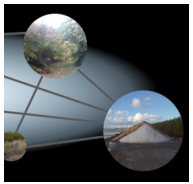


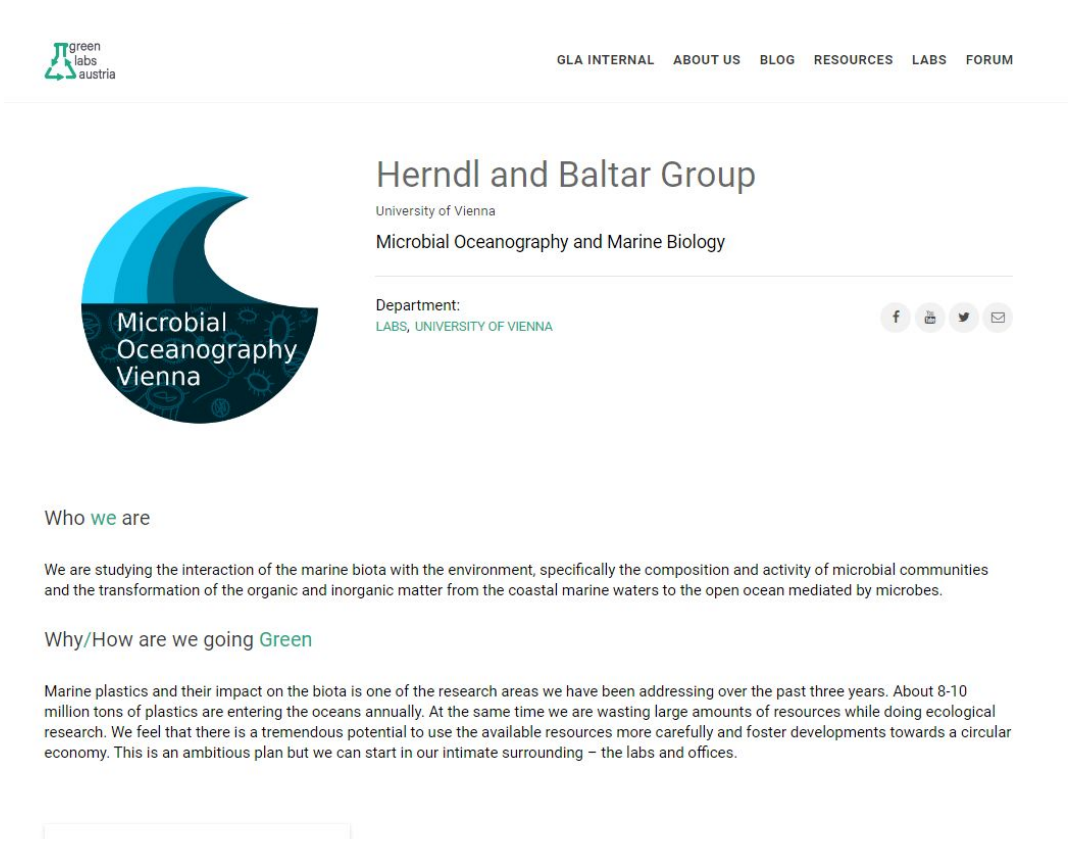




1.) efficient communication of ideas
2.) a supportive network
3.) a strengthened voice when discussing with decision makers
4.) ...

How to join?

1. People who are interested in working with us
2. A short description of the lab
   a. Who you are
   b. Why you want to go green
3. A filled out membership form signed by the group leader



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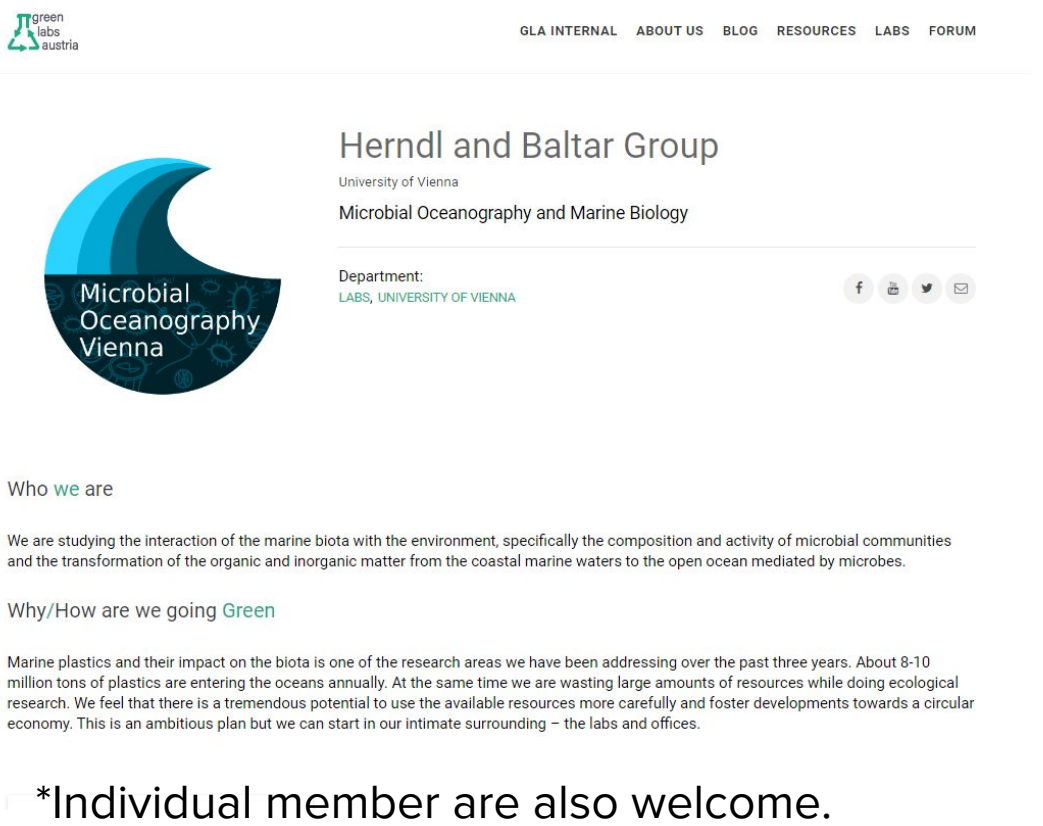
MEMBER



*Individual member are also welcome.

You get out of it what you put into it.

Thank you!

Schleper Group
Thomas Pribasnig
Kevin Pfeifer
Melina Kerou
Logan Hodgskiss
Max Dreer
Andrea Tramontano

Bulgheresi Group
Philipp Weber
Lena König

Rittmann Group
Ipek Ergal

Herndl and Baltar Group
Jennifer Hennenfeind
Maria Pinto

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Questions/Discussion?

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