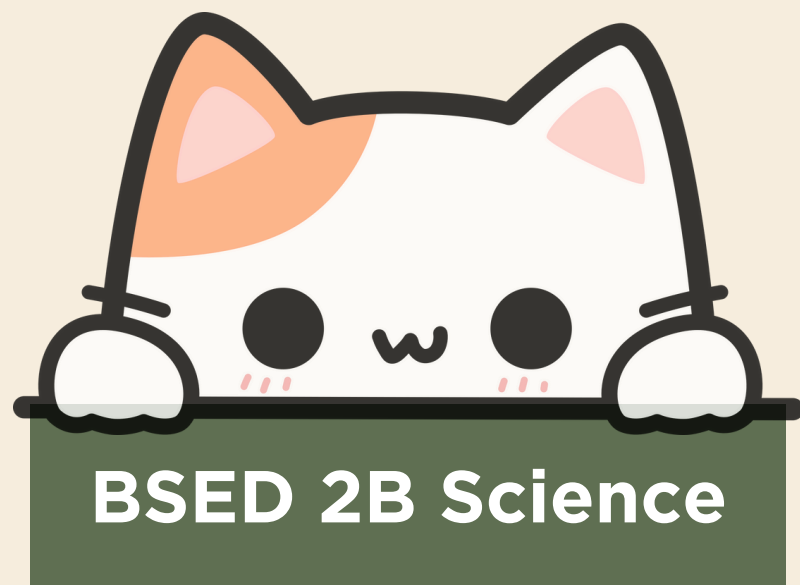




§ Living Lab

# ECOPAWS:

An Exploration on the Potential of Meat and Vegetable Scraps into Cat Food



## Group 3

Izon, Fheonna

Naca, Eduardo

Lagdaan, Trisha Francine

Gigante, Russel Jay

Cañizares, Joevie Gabriel

# IDENTIFIED PROBLEM



**Food Waste**

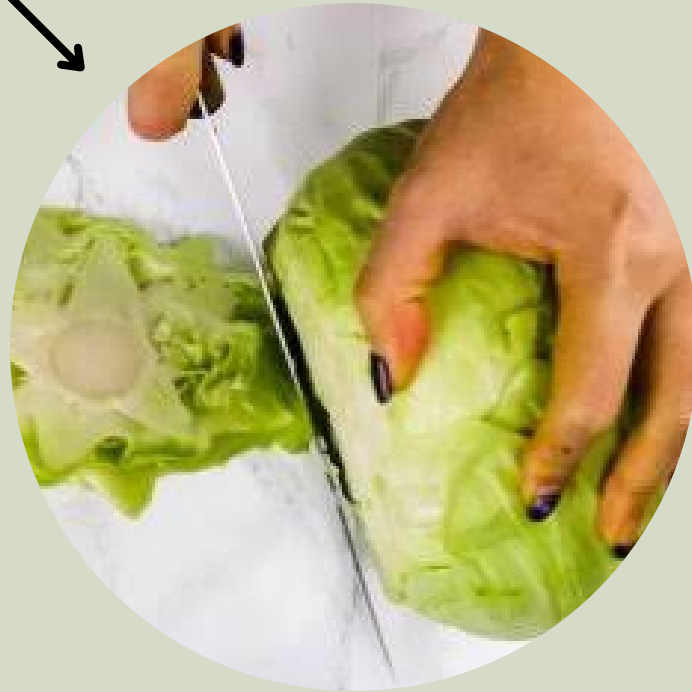
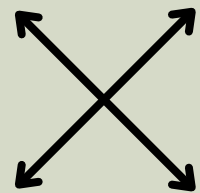


**Methane**



**Animal Shelter**

# INTRODUCTION



# RATIONALE

- Cost - Saving Effects
- Sustainable Pet Food
- Positive Environmental Impacts
  - Reduced food waste
  - Lowers greenhouse gas emissions



# GLOBAL ISSUE



- Landfills produce 5% of global greenhouse gas emissions.



- Decomposing food waste is the main methane source.



- In the U.S., food waste makes up 58% of landfill methane.



# SUSTAINABLE DEVELOPMENT GOALS

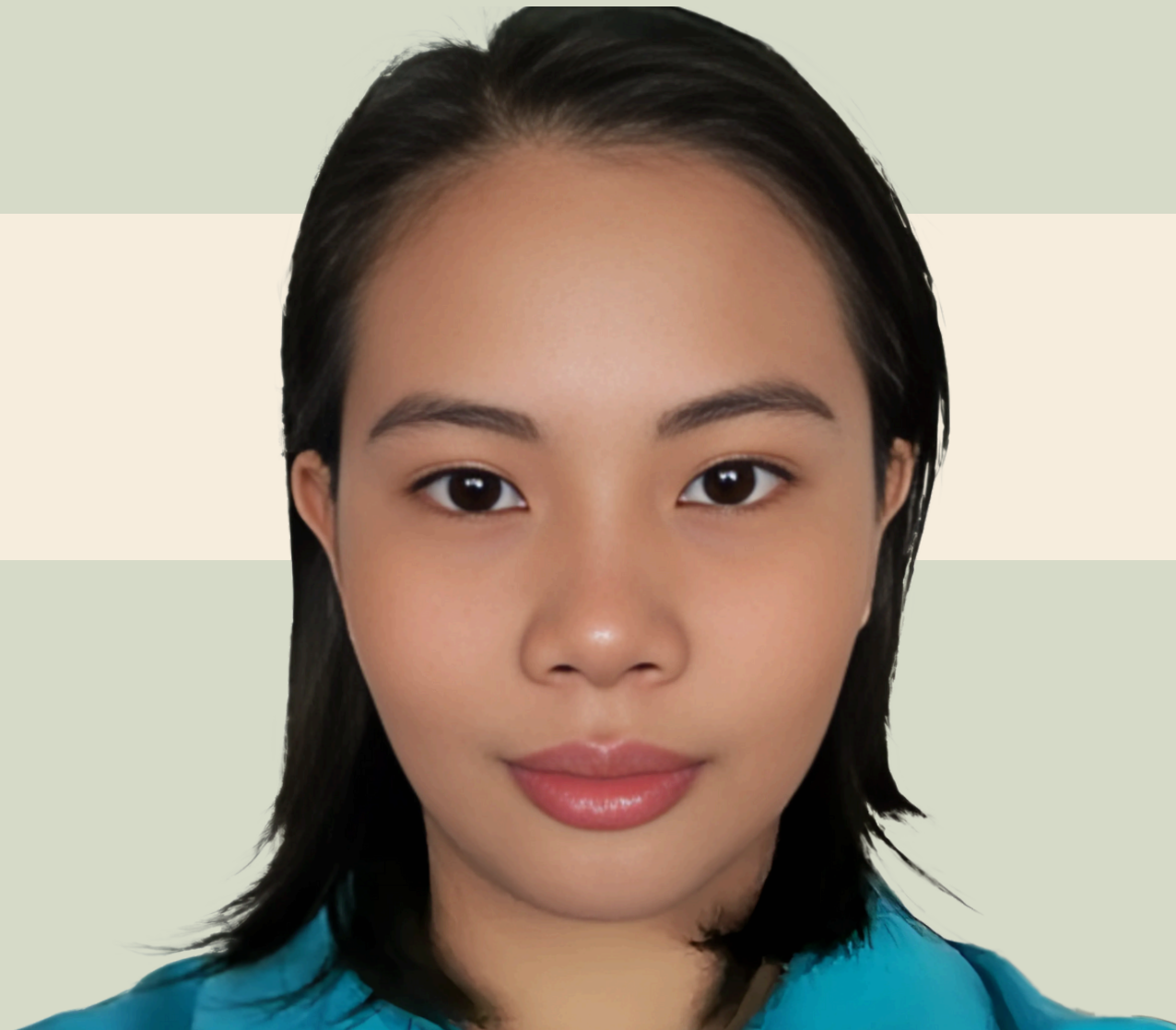
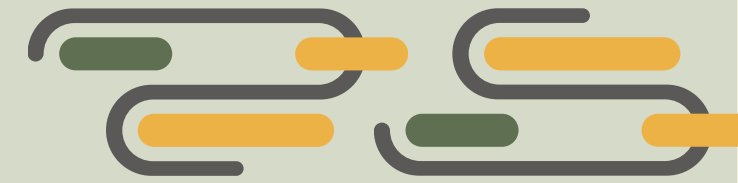




# SUSTAINABLE DEVELOPMENT GOALS



# COLLABORATOR with “Chemical Technician”



**Ruth Royelle L. Izon**

Chem Tech - FTIR Result  
Analysis and Interpretation



# PARTNERED WITH:

## Overview

- Vegetable Market
- Dinalupihan Public Market
- PSHS - CLC Science Laboratory



### Philippine Science High School - Central Luzon Campus

FTIR Analysis of the Cat  
Food



### Dinalupihan Public Market

Meat Source

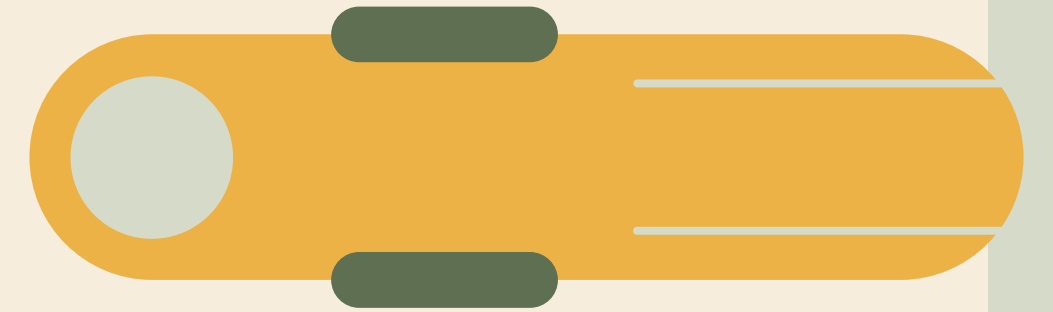


### Vegetable Market

Vegetables Peelings Source



# MATERIALS



**Food processor**



**Spoon**



**Bowls**



**Meat**



**Containers**



**Vegetables**



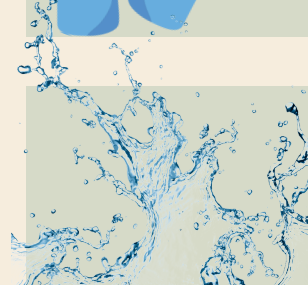
**Strainer**



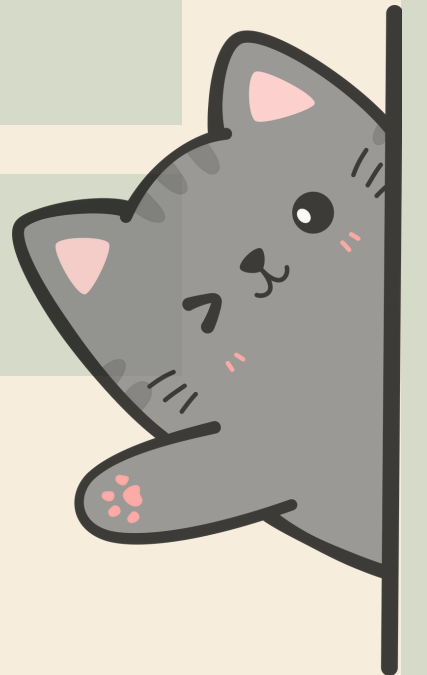
**Gloves**



**Spatula**



**Water**

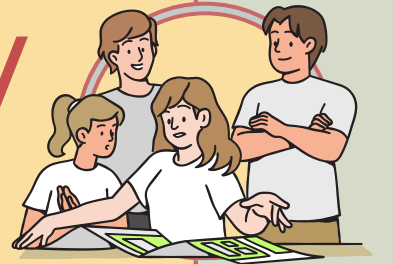


# METHODOLOGY: LIVING LAB PROCESS FOR CAT FOOD DEVELOPMENT

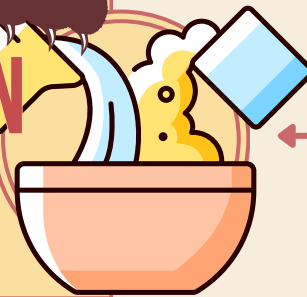
COMMUNITY  
SCANNING



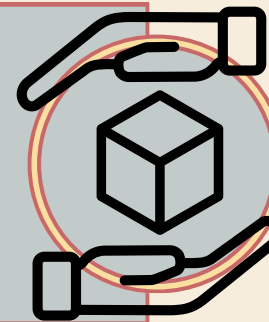
BRAINSTORMING/  
PLANNING



PRODUCT PREPARATION  
AND MAKING



COLLECTION OF  
MATERIALS



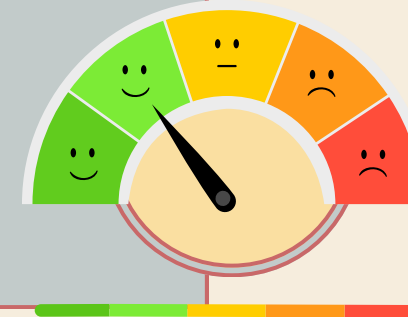
PROPOSAL AND  
VALIDATION



TESTING OF  
PRODUCTS

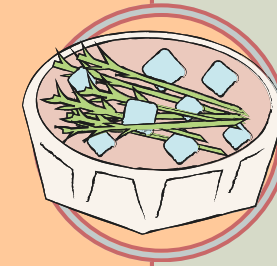


EVALUATION



# METHODOLOGY: CAT FOOD PREPARATION

**BLANCHING OF  
VEGETABLES**



**RINSING OF MEAT**



**BOILING OF MEAT**



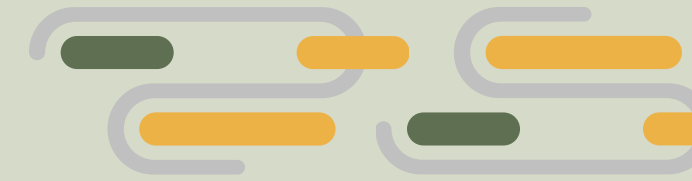
**BLENDING PROCESS**



**TRASFERRING TO  
CONTAINERS**



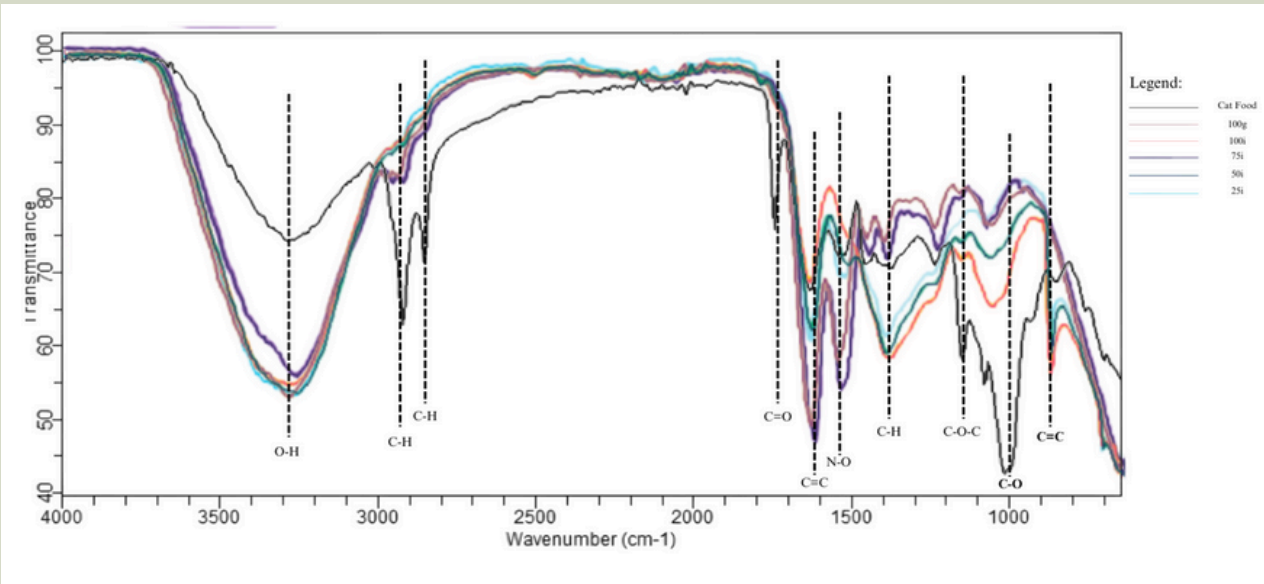
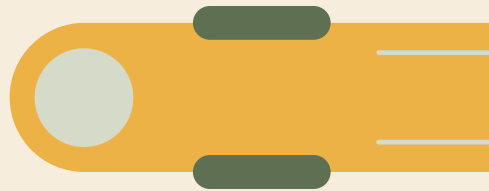
# FORMULATION AND TESTING



Five different concentrations of meat ratios were formulated and brought to PSHS  
- CLC for FTIR Analysis



# OUTCOMES AND IMPACTS



Remarks:

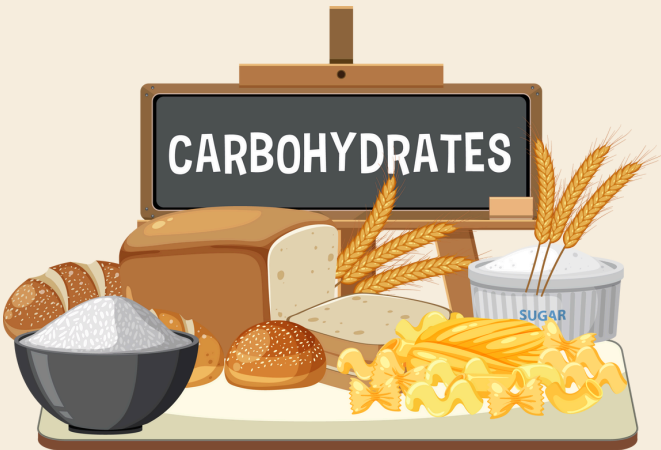
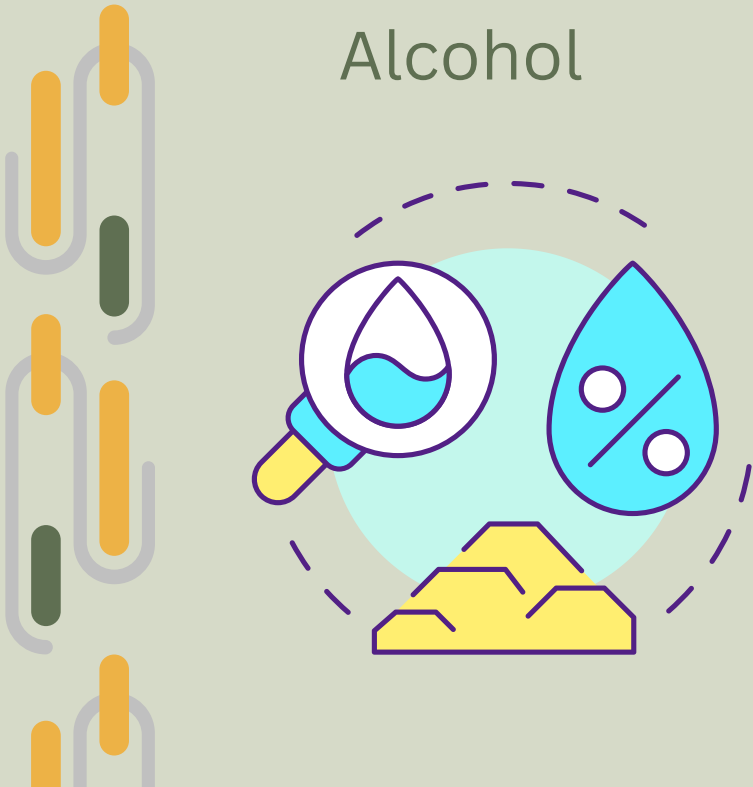
Wavenumber (cm <sup>-1</sup> )	Appearance	Group	Compound Class
3550-3200	Strong, broad	O-H Stretching	alcohol
3000-2840	Medium	C-H Stretching	alkane
1750-1735	Strong	C=O Stretching	Ester
1648-1638	Strong	C=C Stretching	alkene
1550-1500	Strong	N-O Stretching	nitro compound
1390-1380	Medium	C-H Bending	aldehyde
1300-1000	Medium	C-O-C Stretching	ester
1300-1000	Medium	C-O Stretching	ester
895-885	Strong	C=C Stretching	alkene

O-H Stretch  
Alcohol

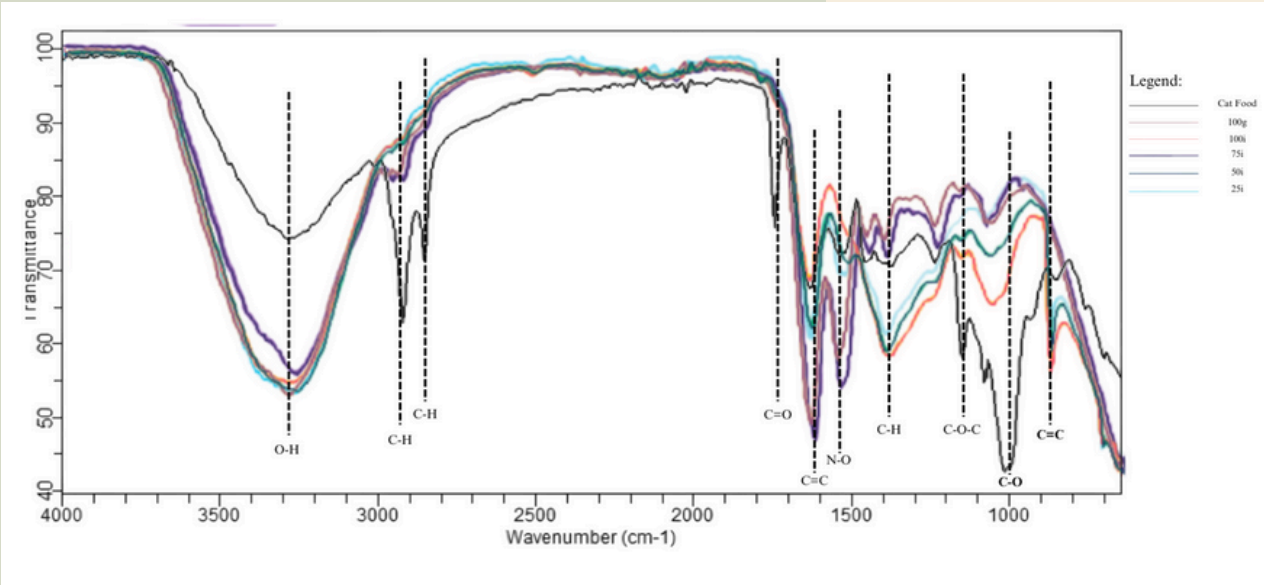
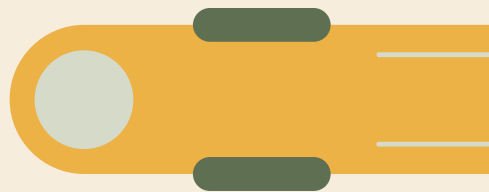
C-H Stretch  
Alkanes/ Aliphatic Chains

C=O Stretch  
Esters/ Carbonyl  
Group

C=C Stretch  
Alkene/ Unsaturated  
Fatty Acids



# OUTCOMES AND IMPACTS



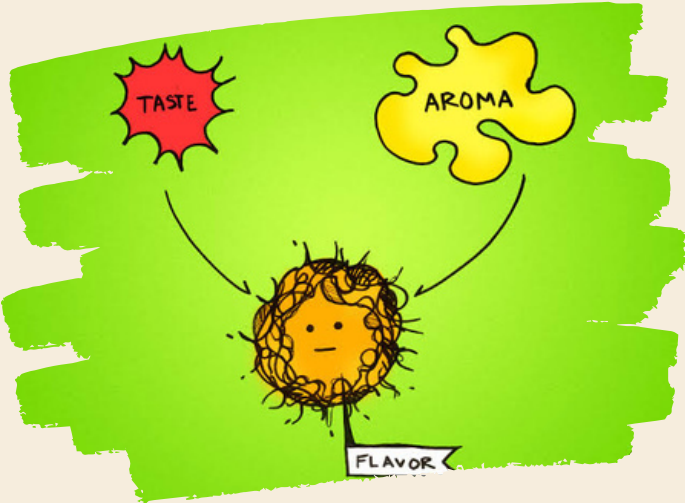
Remarks:

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895-885	Strong	C=C Stretching	alkene

N-O Stretch  
Nitro Group



C-H Bend  
Aldehydes



C-O & C-O-C Stretch  
Esters



# OUTCOMES AND IMPACTS

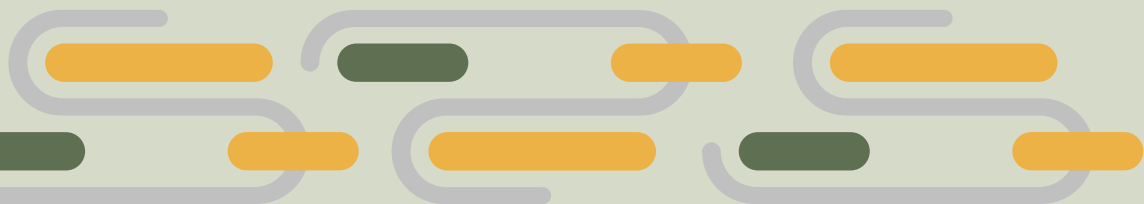


## OUTCOMES

- The spectra presented appeared quite similar in comparison with the commercial dry cat food, but can be seen with different intensities.
- Successful in creating an acceptable formulation of cat food.

## IMPACTS

- Opens up the possibility for commercialization.
- Alleviates the struggle of animal shelters regarding food supplies.
- Lessens greenhouse gas emissions.



# LESSONS LEARNED



## LESSONS LEARNED

The group learned the importance of always preparing alternatives and backup plans in case of instances where things don't go as planned. In addition, active participation allows for eye-opening experiences about the real world.

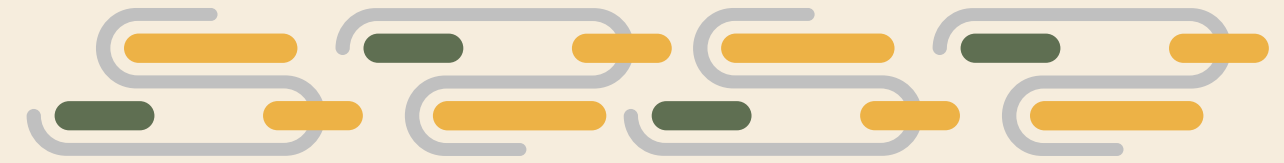


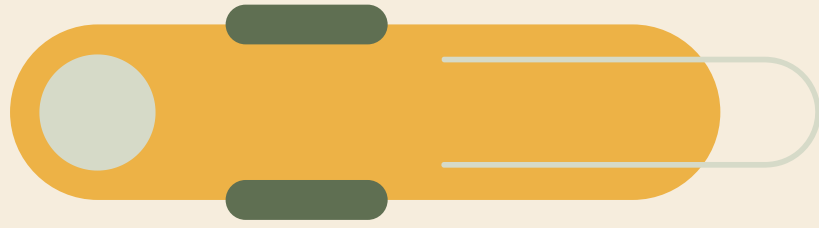
## CHALLENGES

- Class interruptions.
- Budgetary constraints.

# FUTURE DIRECTIONS

- Use NMR, GC, and DSC for deeper analysis.
- Test more scrap concentration levels.
- Add other carbohydrate and fatty acid sources.
- Make pellets or improve wet food packaging.
- Partner with Bureau of Animal Industries (BAI).





# CLOSING AND ACKNOWLEDGEMENT



To our **Professor** who has continuously guided us.

To **vegetable market vendors**.

**PSHS - CLC** along with **Ruth Royelle L. Izon**

To my **groupmates**.

Finally, we would like to thank **Yonsei University**, along with the **professors** who attended, for giving us the opportunity to present our Living Lab Project.



**THANK YOU!**

