



Bern University of Applied Sciences
School of Agricultural, Forest and Food Sciences (HAFL)
Food Science & Management
Consumer Behaviour Group

Towards sustainable eating: Consumers' attitudes and perceptions towards microalgae-based food

Dr. Bárbara Franco Lucas

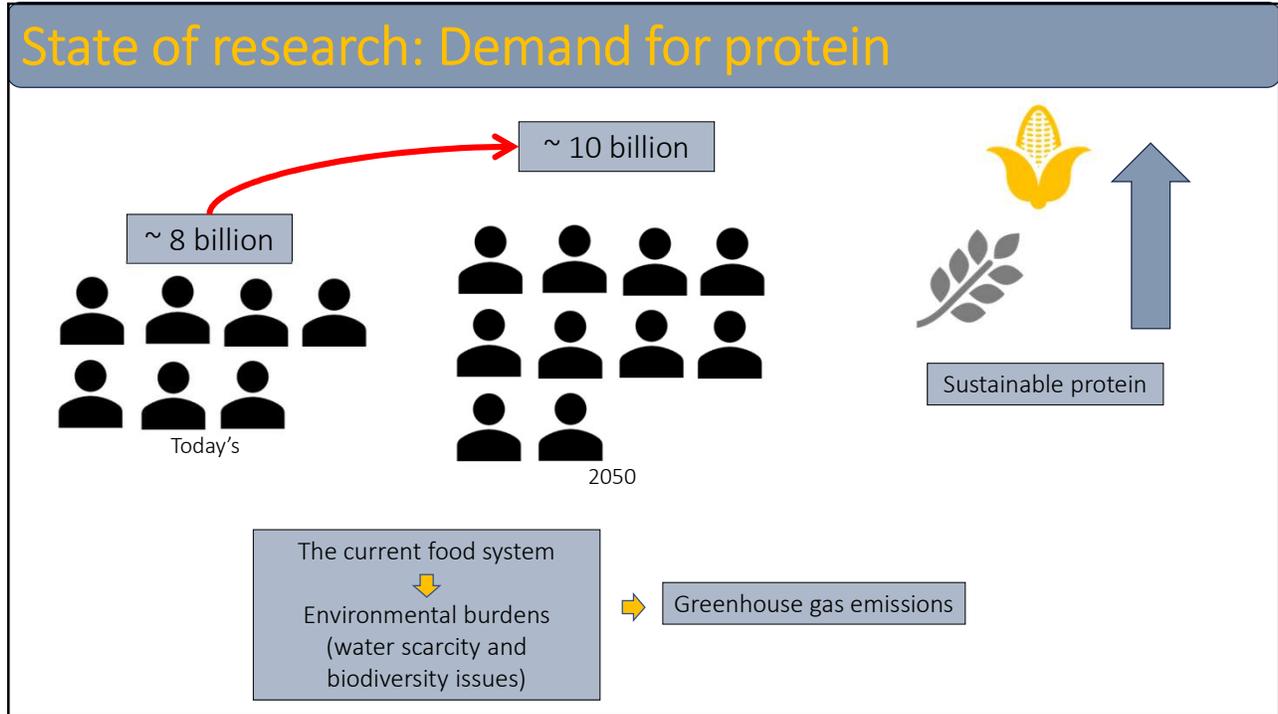
Bern - Switzerland
February - 2026

1

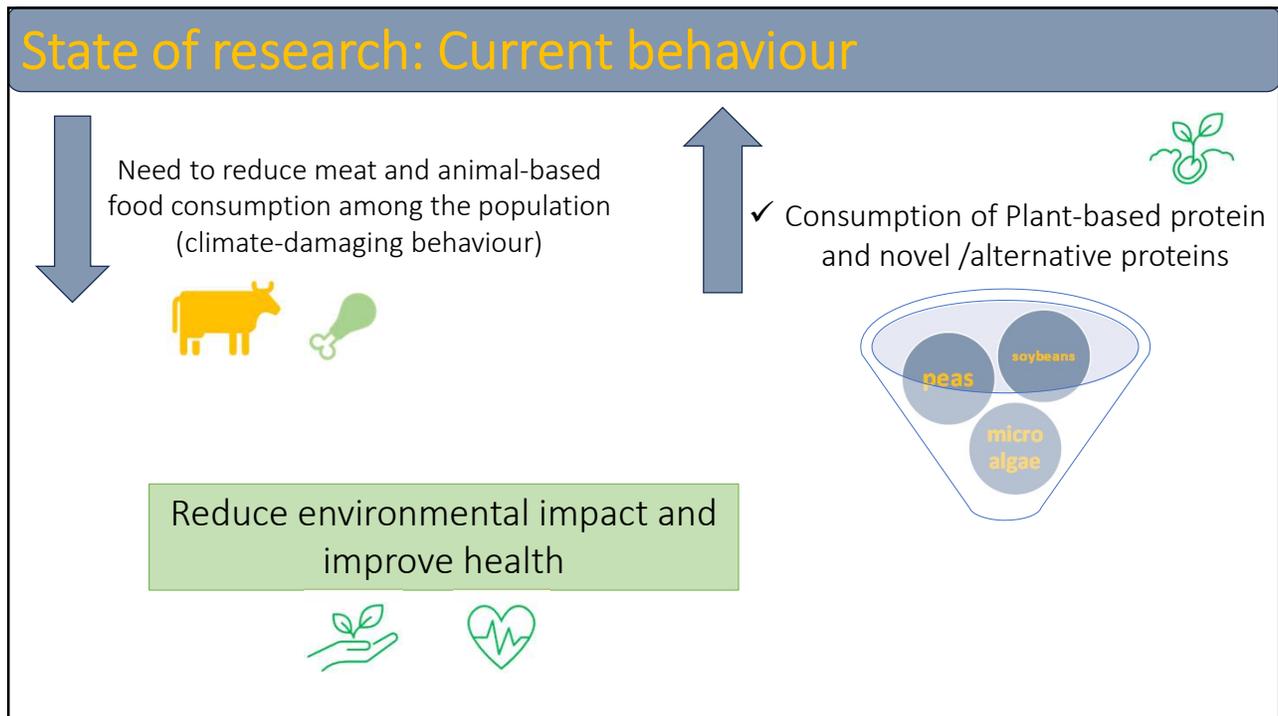
Overview

- Educational and professional background
- Field of research at Bern University of Applied Sciences
- Why microalgae?
- Consumers' attitudes and perceptions towards microalgae (2 latest publications of our research group)

2

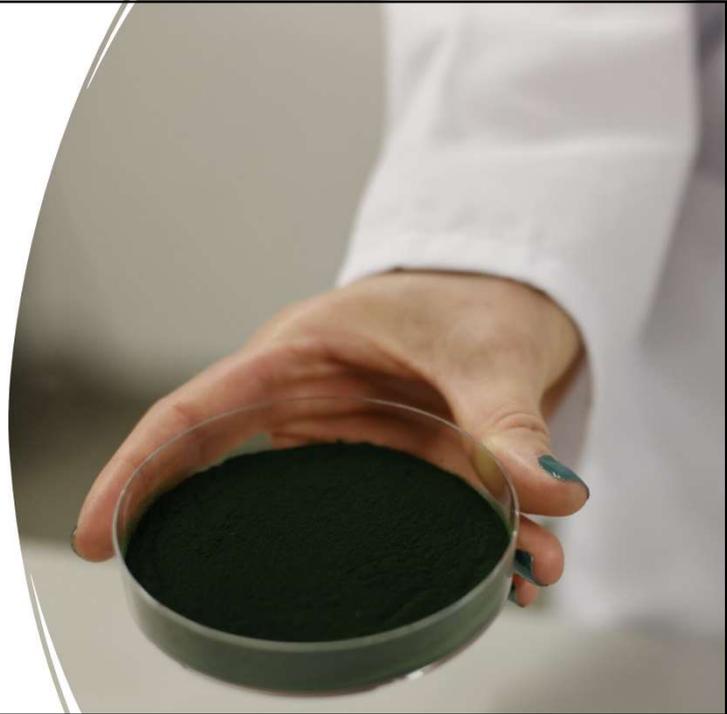


5



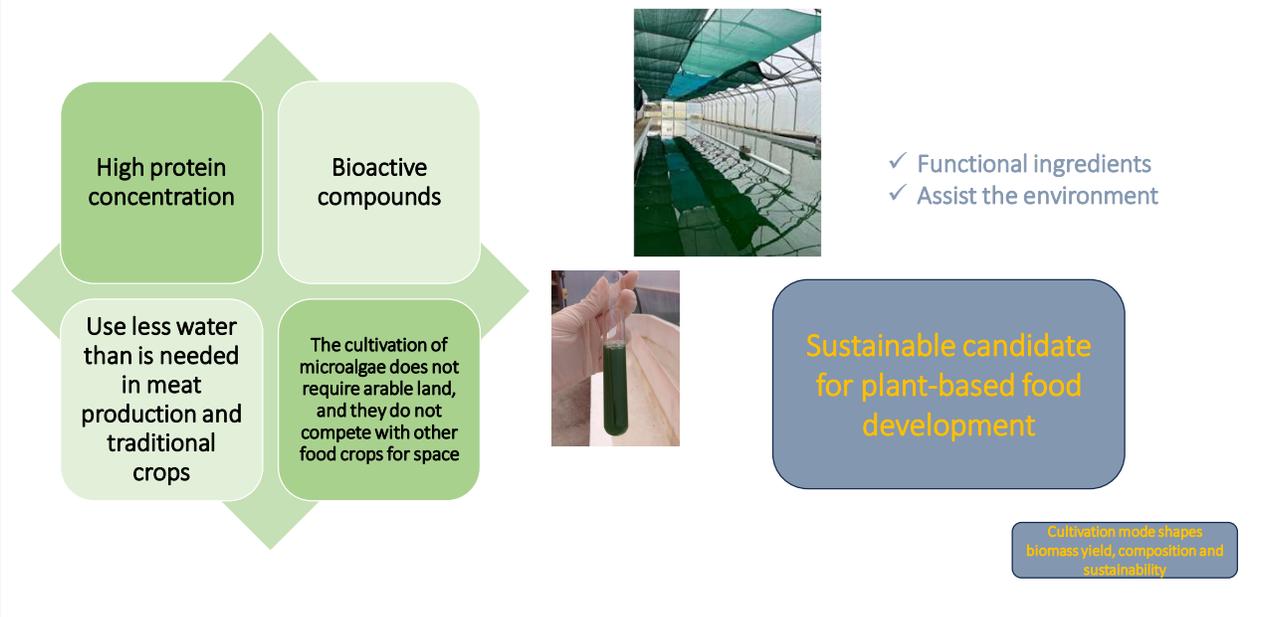
6

Why microalgae?



7

State of research: Edible microalgae



8

State of research: Microalgae applied to food

Unilever and Algeniuty partner to explore use of microalgae protein

Wageningen, the Netherlands - Today Unilever and biotech start-up Algeniuty are announcing a new partnership to delve into the huge potential microalgae bring in Innovating Future Foods for Unilever's plant-based portfolio. Algeniuty, which specialises in developing microalgae for use in consumer products, will work with the R&D team within Unilever's Foods and Refreshments (F&R) division to explore ways of bringing foods made with microalgae to the market.

(Unilever, 2020)



Good food, Good life

Algeniuty

Nestlé to partner with Corbion for the development of microalgae-based ingredients for plant-based products



(Nestlé, 2019)



(Bühler, 2023)



Extruded meat analogues based on yellow, heterotrophically cultivated *Auxenochlorella protothecoides* microalgae

Martin P. Caporagno^{1,2}, Lukas Böcker^{1,3}, Christina Missner^{1,3}, Eric Stirrman^{1,3}, Iris Haberkorn¹, Horst Adelmann¹, Stephan Handschin^{1,4}, Erich J. Windhab^{1,3}, Alexander Mathys^{1,3}



Gelling capacity of cell-disrupted *Chlorella vulgaris* and its texture effect in extruded meat substitutes

Corn De Gal^{1,2}, Silvia Snel^{1,2}, Yezmar Rodriguez¹, Michael Beyrer^{1,2}

¹ University of Applied Sciences and Arts Western Netherlands, School of Engineering, Sittard, the Netherlands
² Food Microbiology, Wageningen University & Research, Wageningen, the Netherlands
³ Food Process Engineering, Wageningen University & Research, Wageningen, the Netherlands



Structural and rheological properties of meat analogues from *Haematococcus pluvialis* residue-pea protein by high moisture extrusion

Songgang Xia¹, Yong Xue¹, Changhui Xue^{1,2}, Xiaoming Jiang^{1,2}, Jing Li^{1,2}

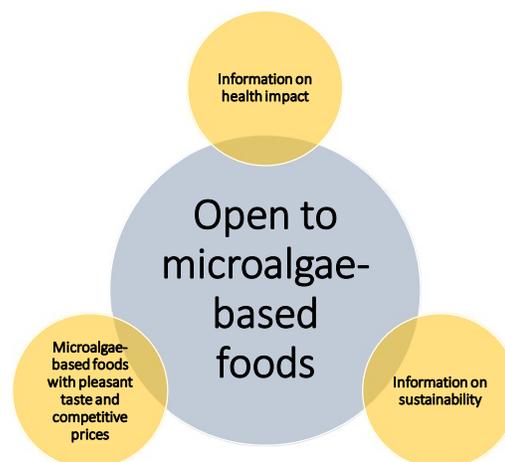
9

State of research: Consumer behaviour

A diet shift to more sustainable ones can contribute immensely to the environment and reduce climate footprint

As important as food technology is to evaluate consumers' attitudes and perceptions toward microalgae

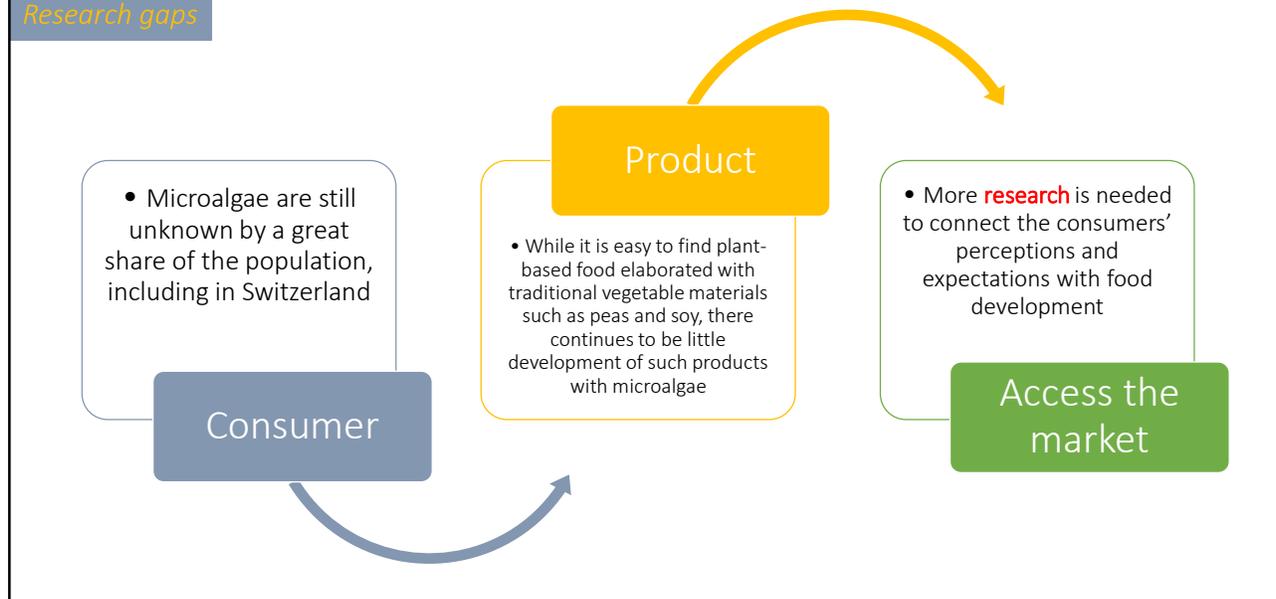
Finding the determinants for choosing microalgae can help in identifying barriers to and drivers of consumption



10

State of research

Research gaps



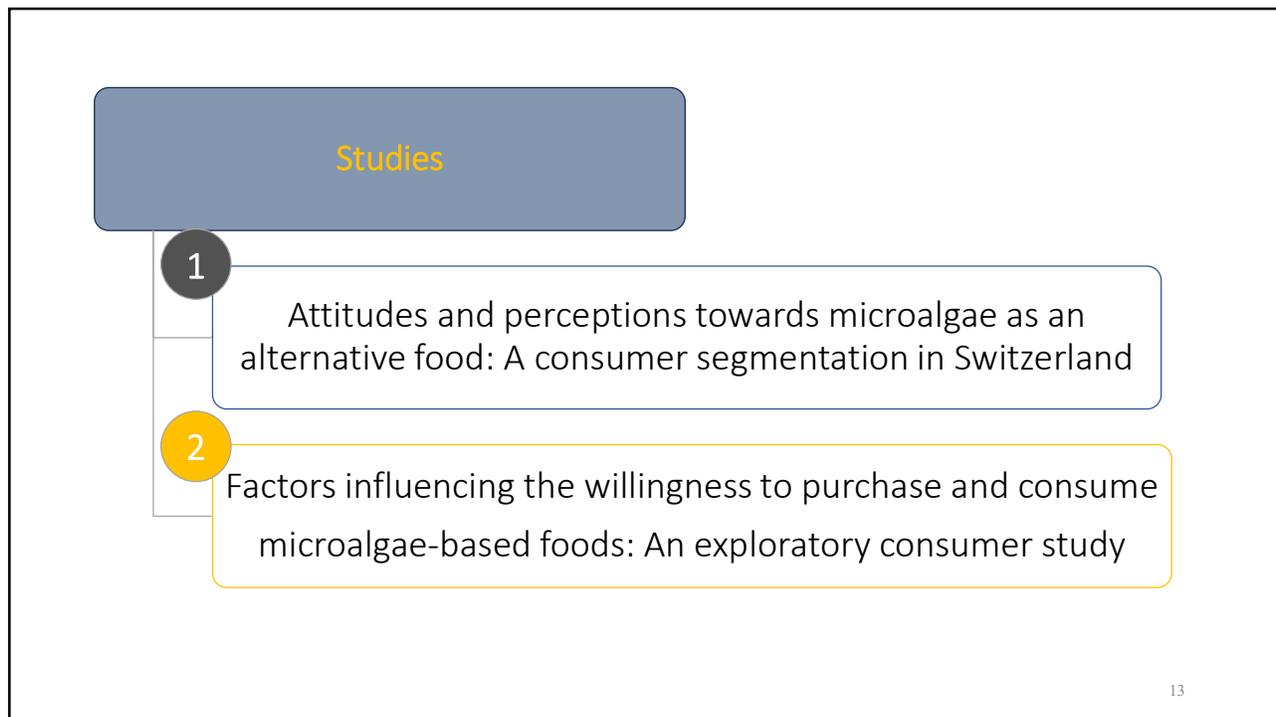
11

Overall aim

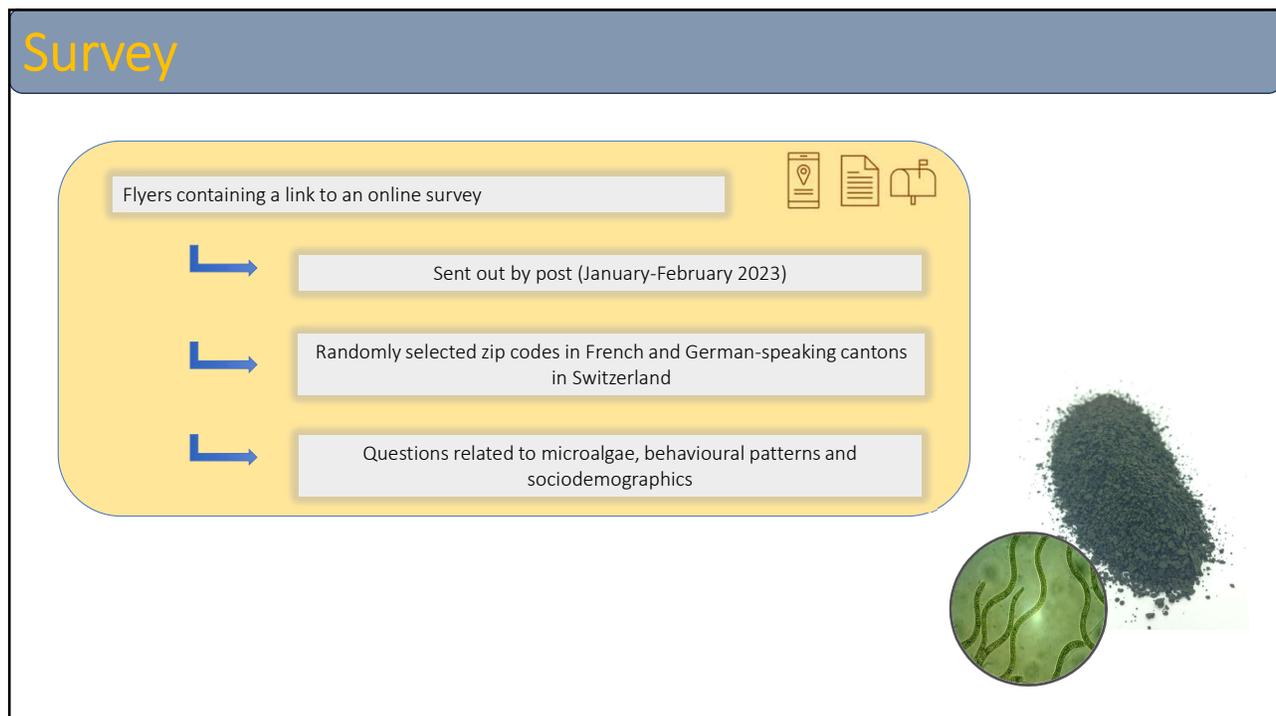
Understand Swiss consumers' perceptions, experiences and attitudes towards microalgae as food



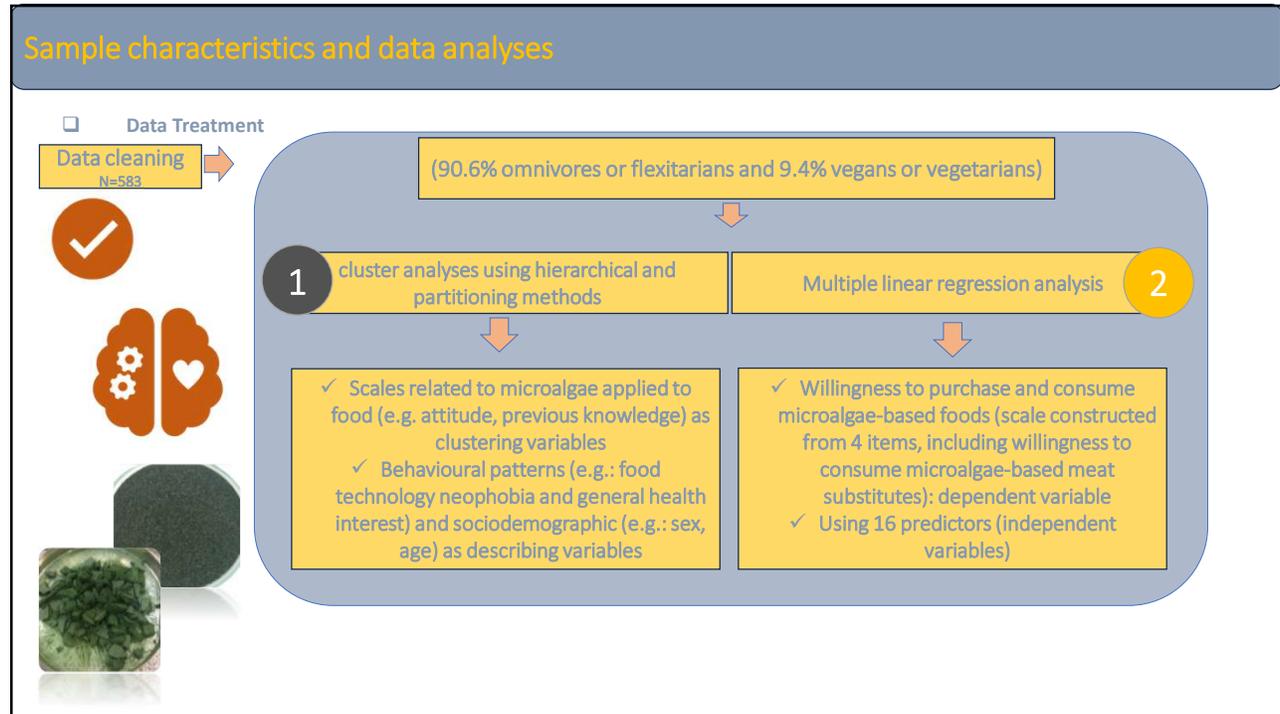
12



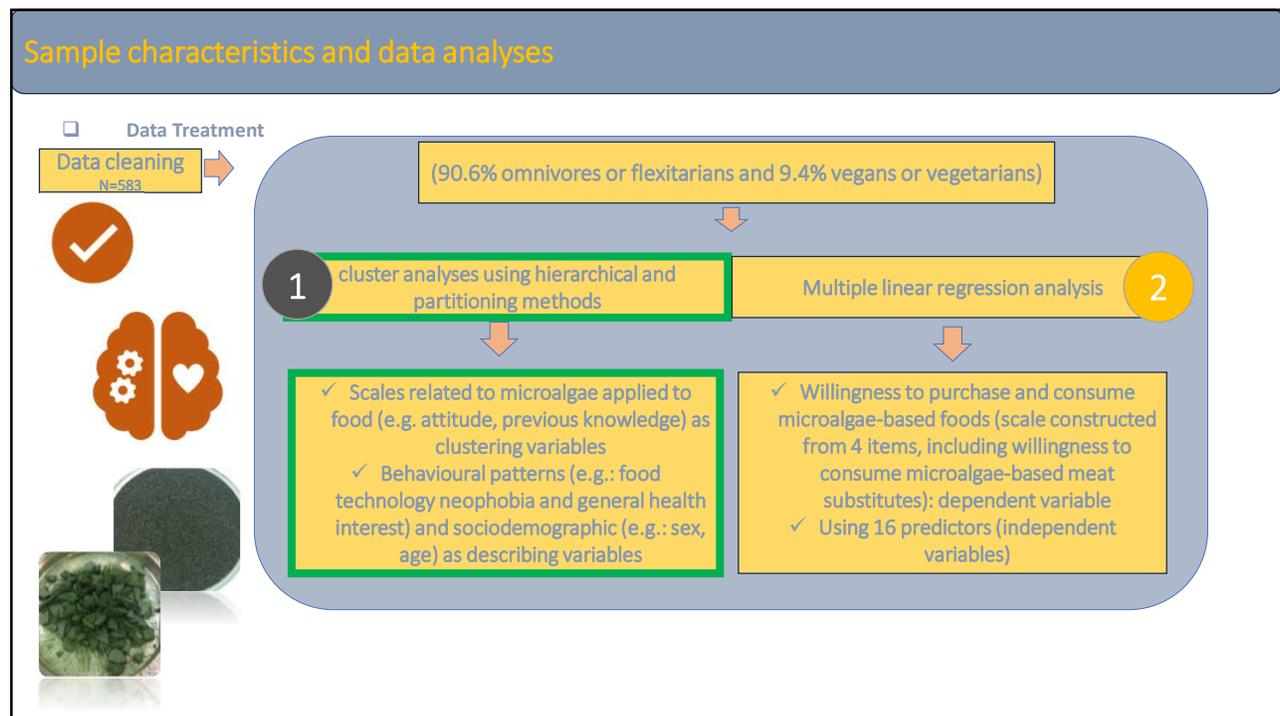
13



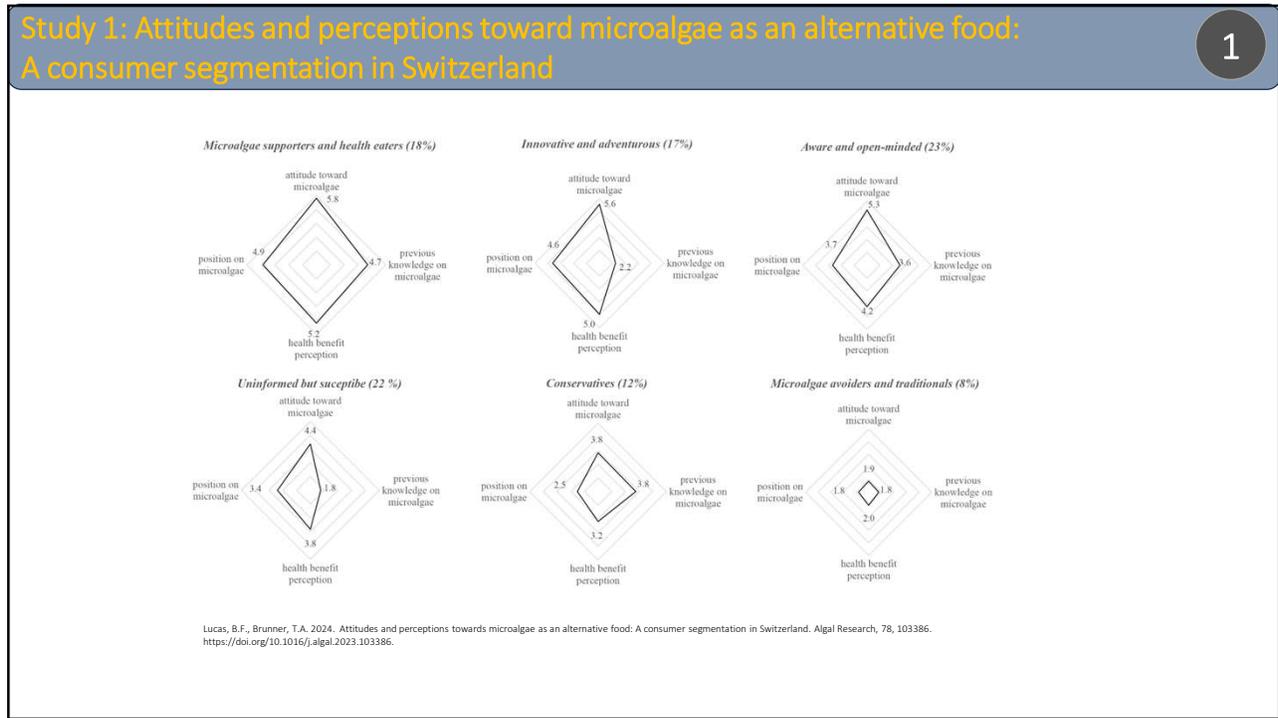
14



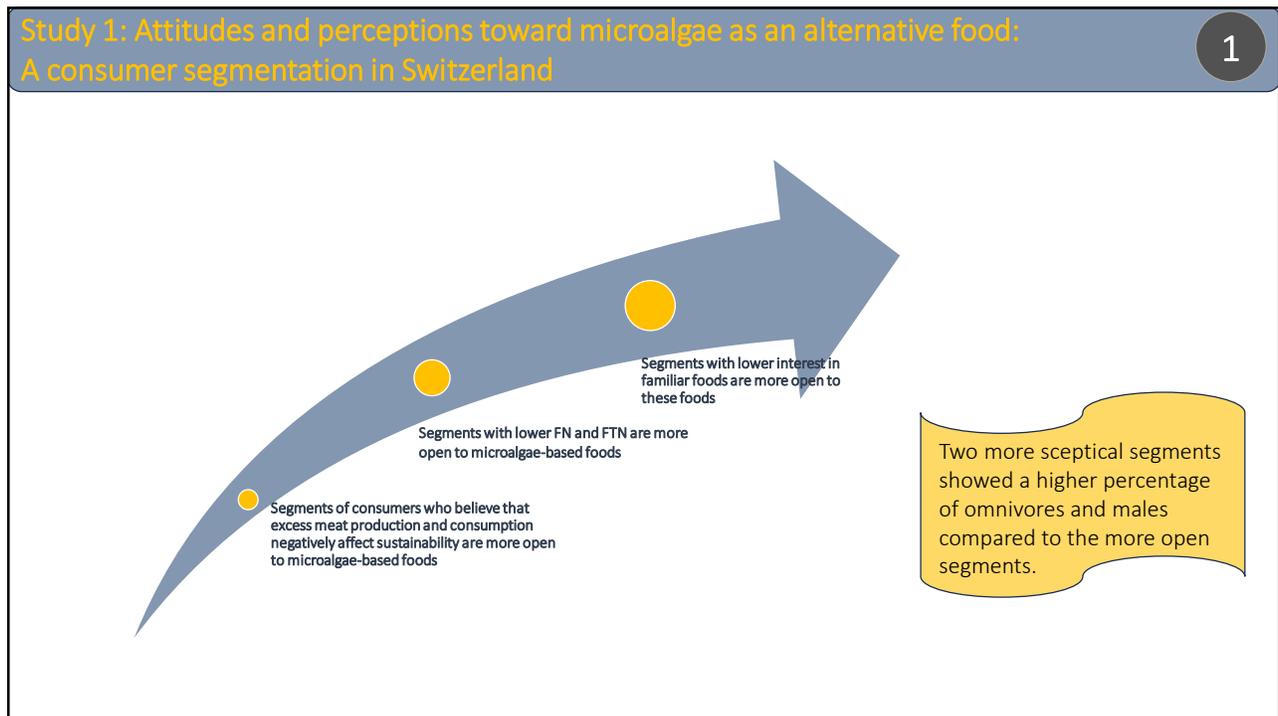
15



16



17



18

Strategies proposed for each segment 1



(Lucas et al., 2020)



Strategies could also benefit from targeting specific groups of non-omnivores and females



6: Offering microalgae-based meals that resemble traditional dishes
Use microalgae biomass that do not have an intense green colour



2,3 and 4: Providing information about the benefits of microalgae (e.g. through events, exhibitions, and tasting in supermarkets)
5: focus on naturalness /6: environmental impact of farmed animal-based food production



1: Gastronomy sector: increase the offer of meals using natural ingredients and creative recipes



1 and 5: Increase the offer of microalgae-based foods using natural ingredients and competitive prices

19

Sample characteristics and data analyses

☐ Data Treatment

Data cleaning
N=583





(90.6% omnivores or flexitarians and 9.4% vegans or vegetarians)

1 cluster analyses using hierarchical and partitioning methods

2 Multiple linear regression analysis

- ✓ Scales related to microalgae applied to food (e.g. attitude, previous knowledge) as clustering variables
- ✓ Behavioural patterns (e.g.: food technology neophobia and general health interest) and sociodemographic (e.g.: sex, age) as describing variables

- ✓ Willingness to purchase and consume microalgae-based foods (scale constructed from 4 items, including willingness to consume microalgae-based meat substitutes): dependent variable
- ✓ Using 16 predictors (independent variables)

20

10

Study 2: Factors influencing the willingness to purchase and consume microalgae-based foods: An exploratory consumer study

2

- Multiple linear regression analysis predicting the respondents' willingness to purchase and consume microalgae-based foods.

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Constant	2.38	0.22		<0.001
Sustainability	0.40	0.03	0.48	<0.001 ***
Food technology neophobia	-0.38	0.03	-0.36	<0.001 ***
Environmental protection	0.14	0.04	0.11	<0.001 ***

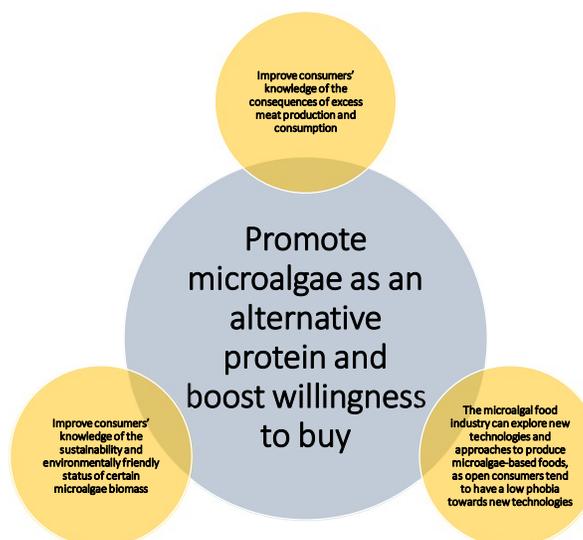
Note: Sustainability construct (M = 4.01; SD = 1.38); Food technology neophobia (M = 3.48; SD = 1.11); Environmental protection (M = 4.83; SD = 0.88).



21

Study 2: Factors influencing the willingness to purchase and consume microalgae-based foods: An exploratory consumer study

2



22

Study 2: Factors influencing the willingness to purchase and consume microalgae-based foods: An exploratory consumer study

2

Descriptive

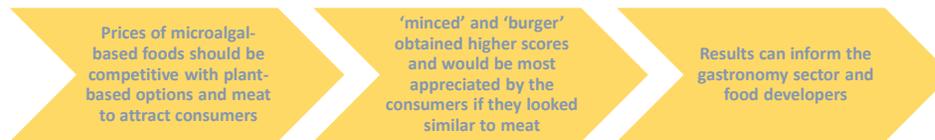
Items	Mean	SD
Willingness to consume microalgae-based meat substitutes*	2.83	1.35
I can imagine buying and consuming microalgae/microalgae-based foods regularly**	4.05	1.30
I would be willing to pay a little more for microalgae/microalgae-based foods than for vegetables**	3.33	1.38
I would be willing to pay a little more for microalgae-based meat substitutes than for meat**	3.12	1.54

Note: *Scale measurement ranging from 1 = very unlikely to 6 = very likely. **Scale measurement ranging from 1 = strongly disagree to 6 = strongly agree.

"How likely are the following microalgae-based products to be a regular part of your diet if they look similar to meat?"

Items	Mean	SD
Minced	3.27	1.75
Burger	3.11	1.73
Nuggets	2.96	1.69
Balls	2.94	1.68
Marinated pieces	2.79	1.62
Sausage	2.61	1.58
Filet pieces	2.55	1.56
Sliced cold	2.41	1.51

Note: *Scale measurement ranging from 1 = very unlikely to 6 = very likely. Question:



23




Scan me!







Dr. Bárbara Franco Lucas
barbara.franco@bfh.ch



Thank you!

24