START
CENTRE FOR SUSTAINABLE AGRIFOOD SYSTEMS

HUB kick-off meeting – Launching of the sustainable blue-green resources & economy (2GETHER) HUB

HoloFood

A brief introduction

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817729

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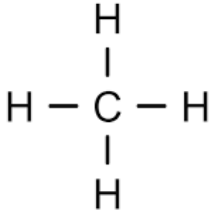
Who we are

HoloFood

Why did we apply (1)?



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Why did we apply (2)?

Trends in Biotechnology

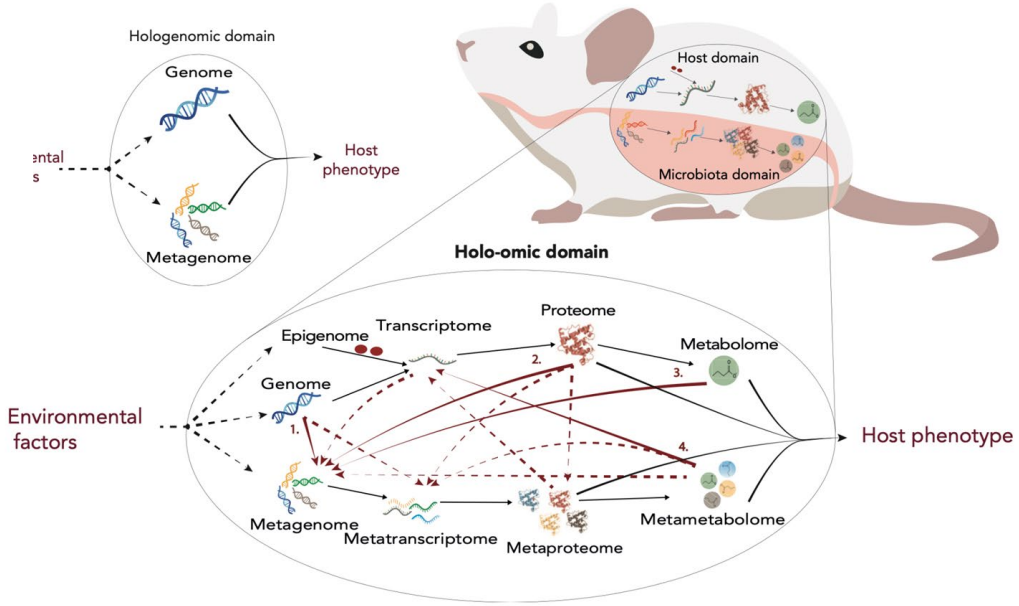
CellPress
REVIEWS

Opinion

Applied Hologenomics: Feasibility and Potential in Aquaculture

Morten T. Limborg,[1,*,@] Antton Alberdi,[1] Miyako Kodama,[1] Michael Roggenbuck,[2] Karsten Kristiansen,[3,4] and M. Thomas P. Gilbert[1,5]

nature reviews genetics



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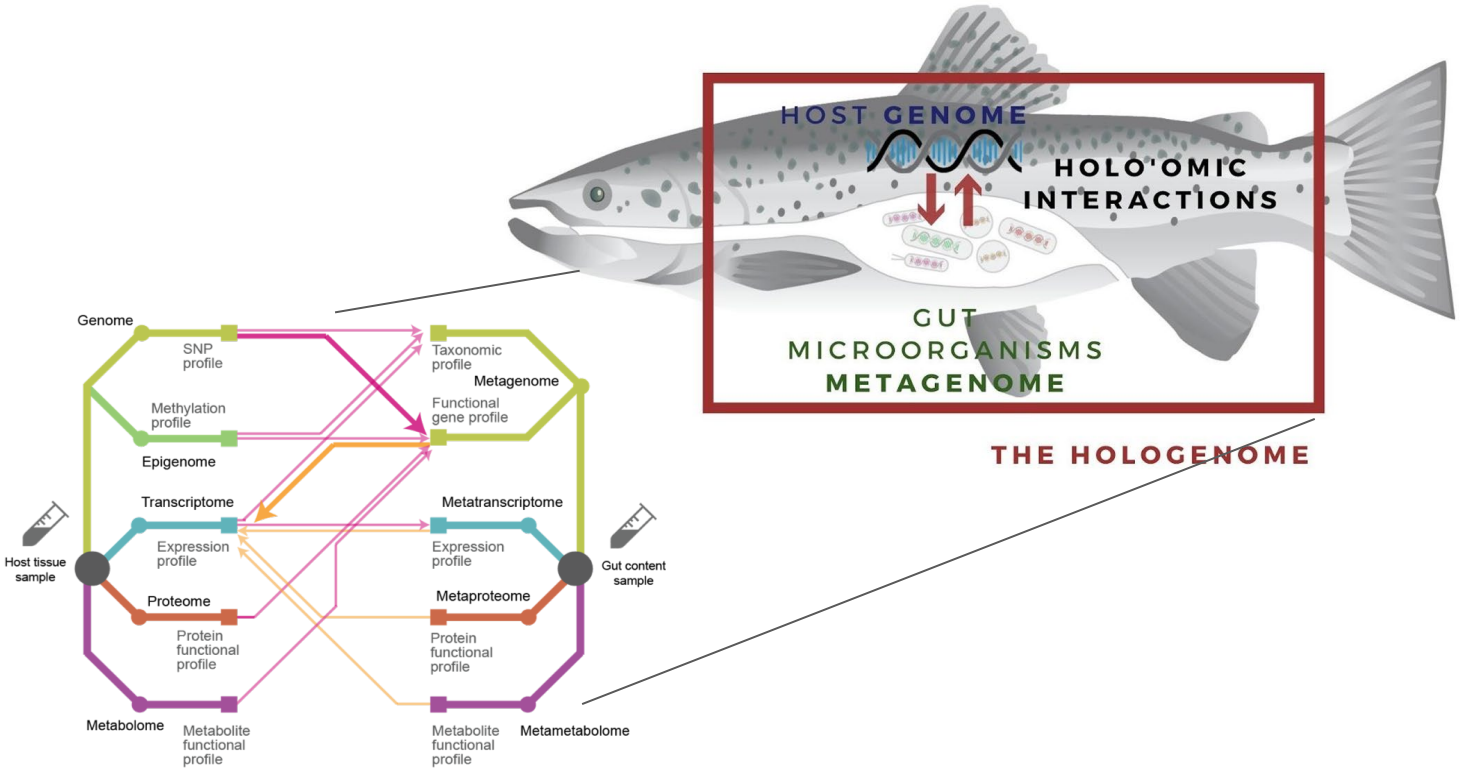
Hologenomics: several steps beyond



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Restricted to 2 systems

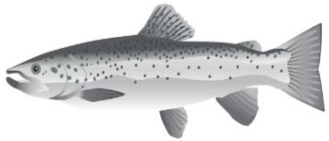
PIAST

CHR HANSEN

Chicken
Gallus gallus domesticus

- Terrestrial environment
- Closed Environment
- Fast growth time

FEED ADDITIVES:
Prebiotics
Probiotics



Salmon
Salmo sar

- Marine Environment
- Semi open environment
- Slow growth time (2-3 years)

NOVEL SUSTAINABLE FEEDS
Seaweed
Blue mussel

LERØY

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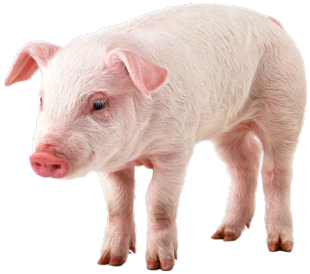
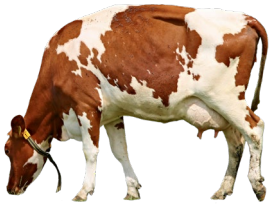
Transferable to other systems

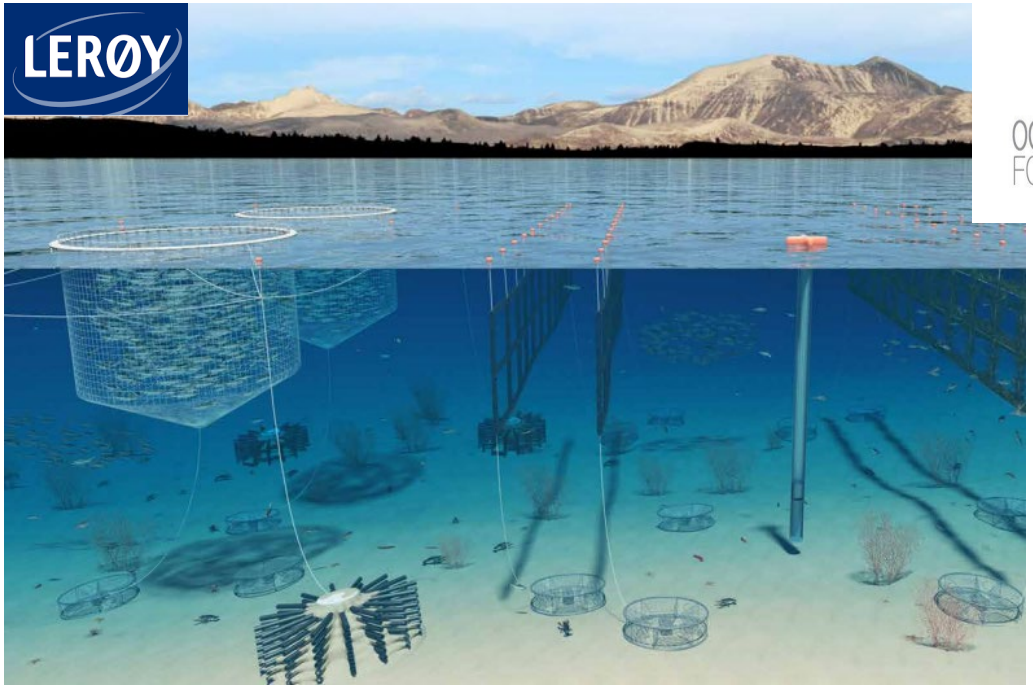




What did we find?

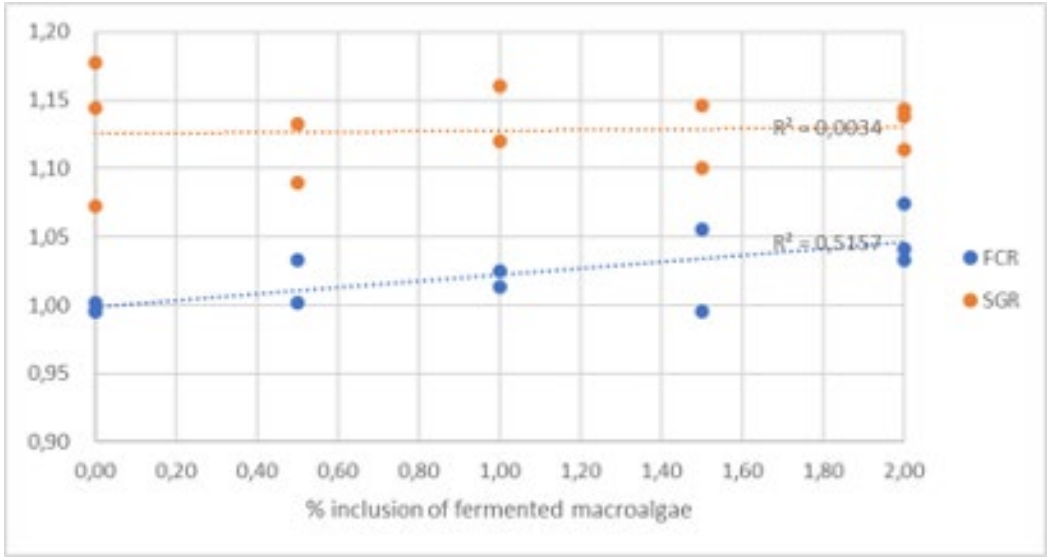
Harald Sveier

BELLONA



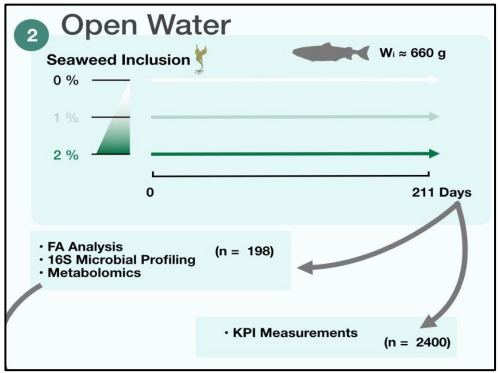
OCEAN FOREST

Overview of initial growth results



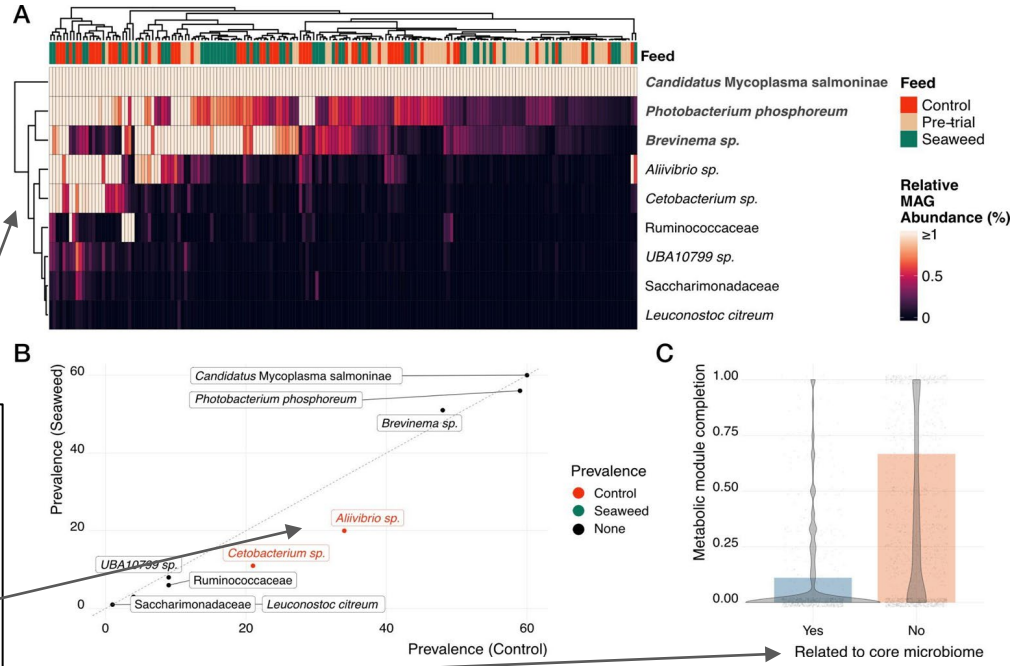
- **No difference in growth rate**
- **Small to no reduction in feed efficiency**

Seaweed stabilises the microbiome



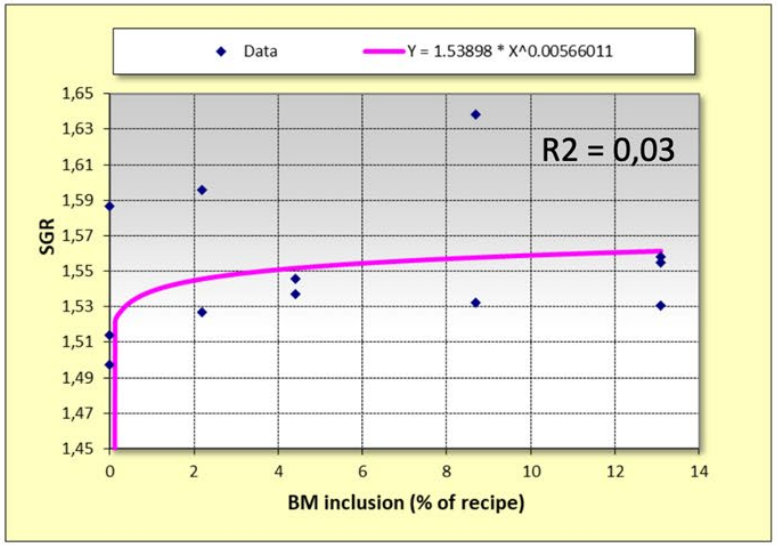
Seaweed =>

1. Stabilized natural microbiome
2. ‘Potential’ reduction of pathogens
3. Natural microbiome ‘steal’ less feed

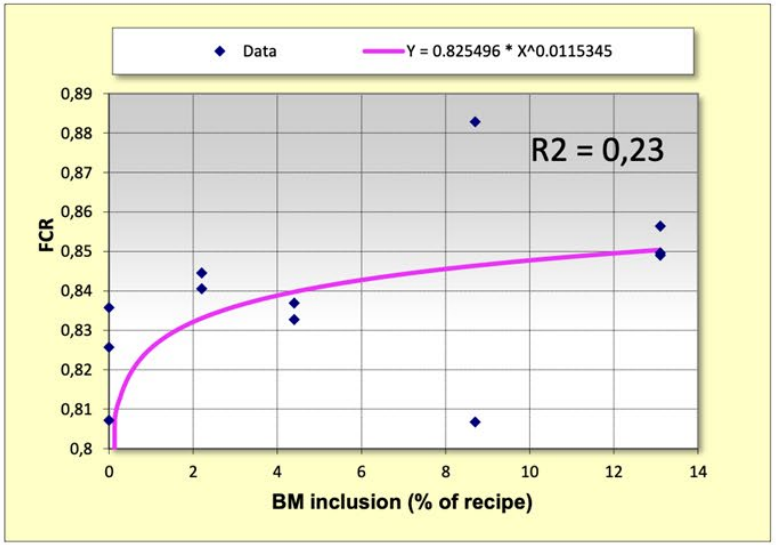


Overview of initial growth results

Specific growth rate



Feed conversion ratio



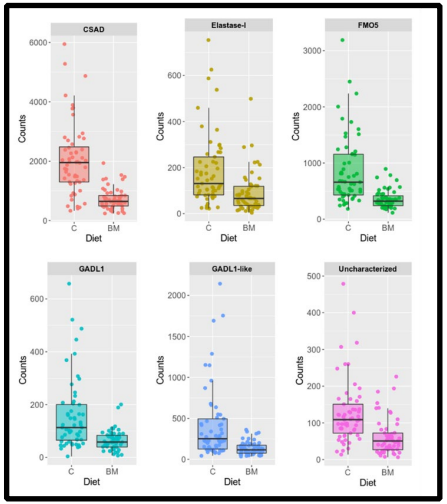
- **No difference in growth rate**
- **No difference in feed efficiency**

Functional hologenomics

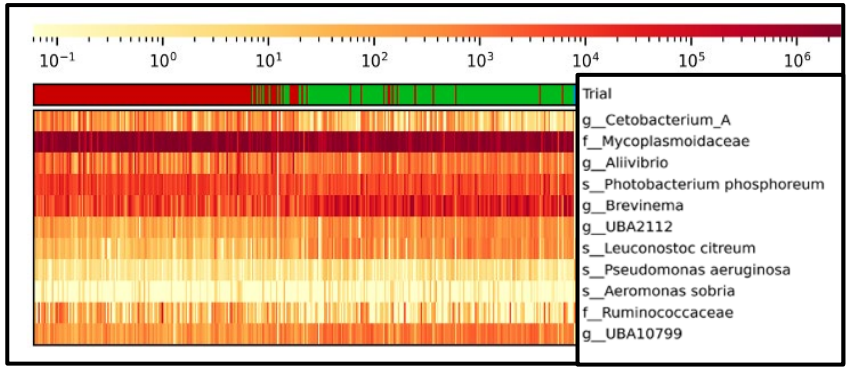
DNA => No differences among hosts or microbiomes

RNA => Differences in both hosts & microbiomes

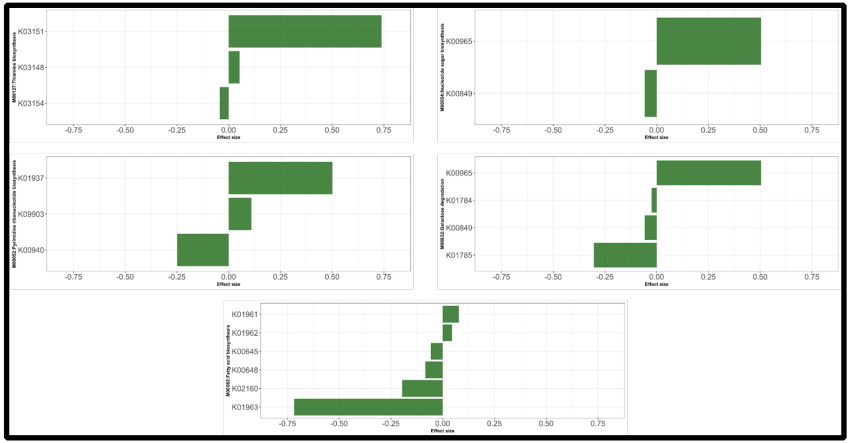
Host RNA



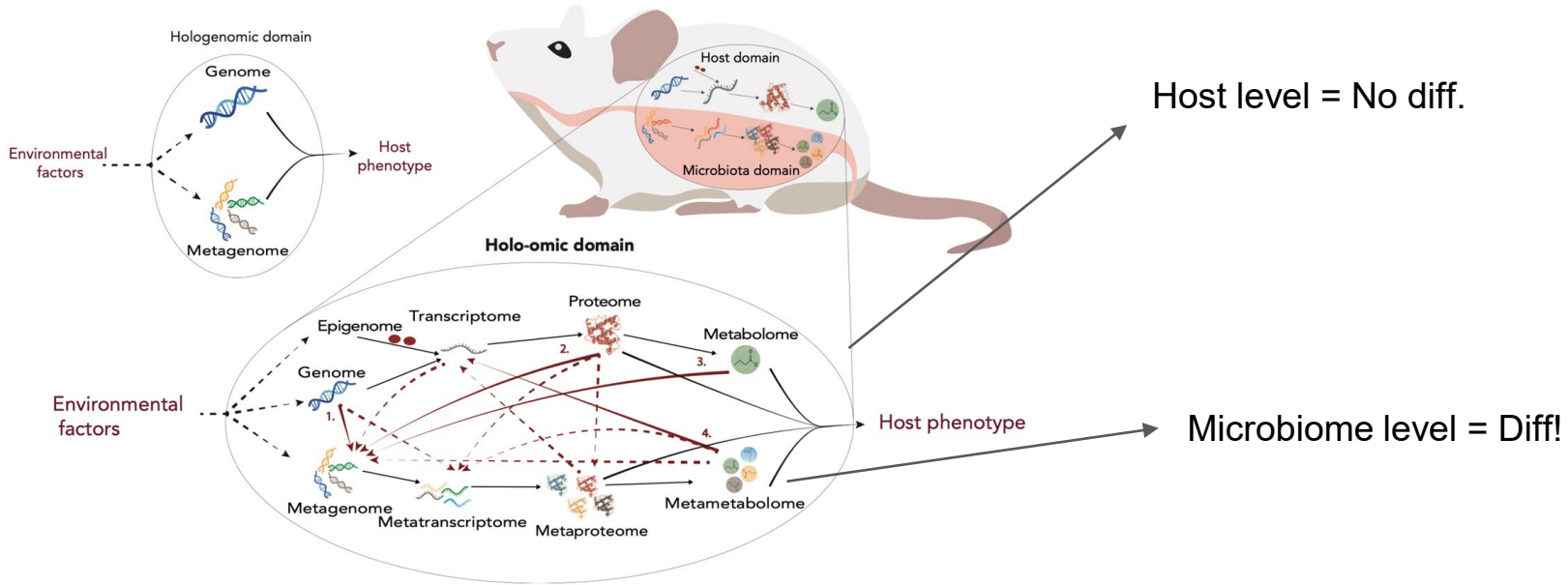
Microbiome DNA



Microbiome RNA



Functional hologenomics



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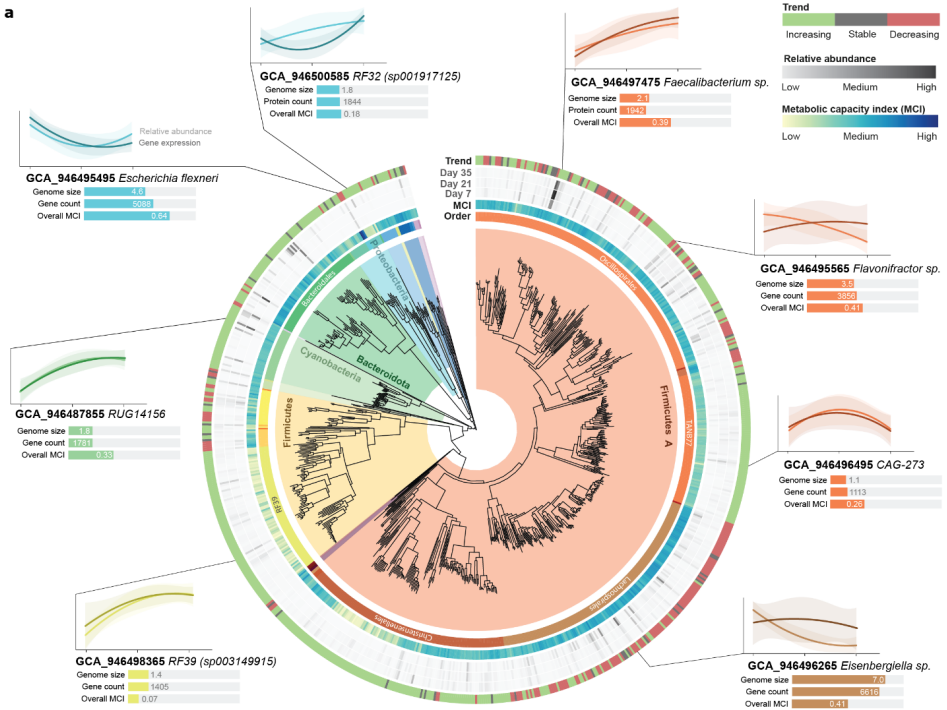
What did we find?

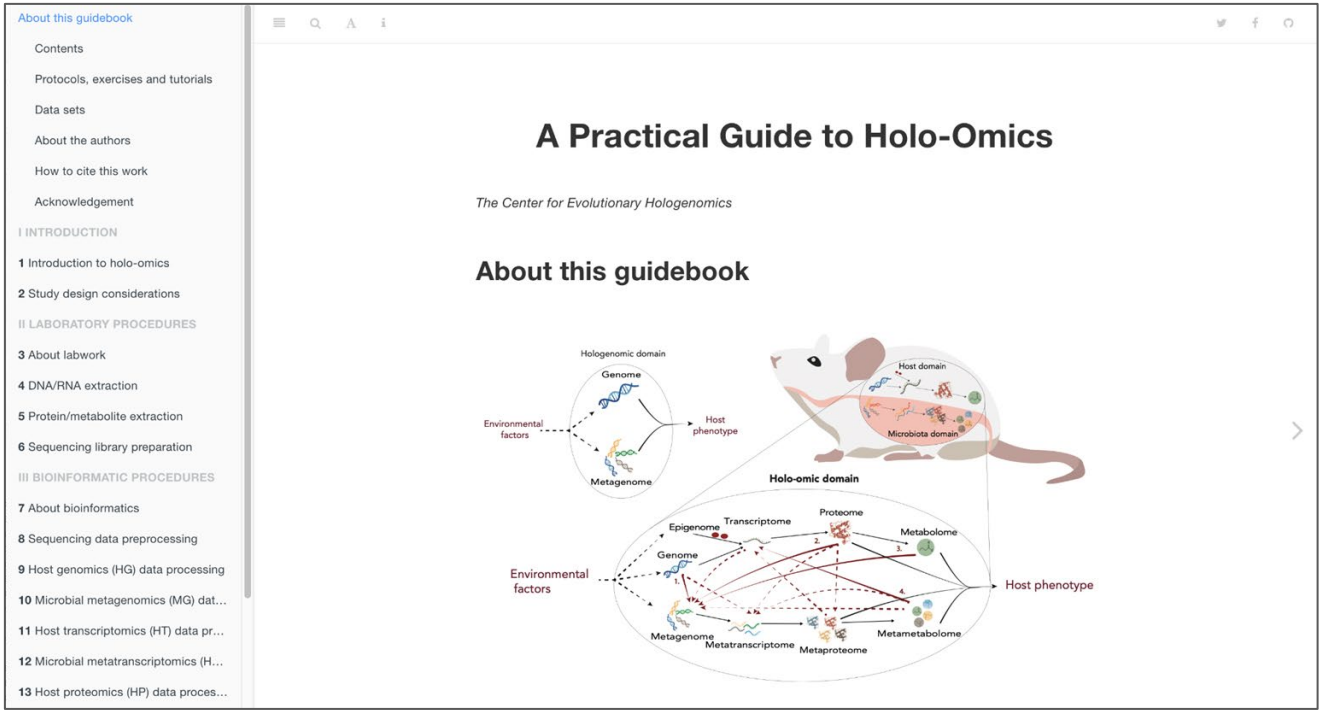
Improve overall knowledge on poultry microbiomes

- Hundreds of new genomes
- Millions of new genes
- Functional modelling

- Metabolic capacity vs composition analysis



Developed a generic tool for hologenomic analyses



MSc courses
PhD courses
Student projects

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Thank You

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