Global Research Alliance Flagship Project

RUMEN GATEWAY

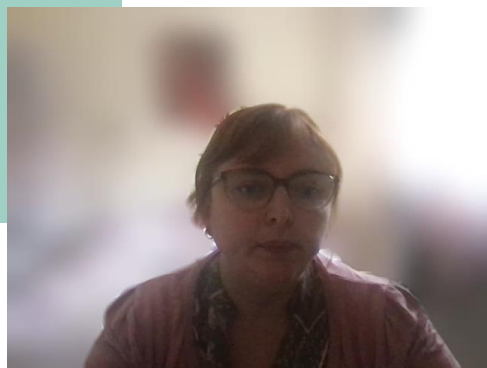
BACKGROUND

01. Culture Collection Challenge

Further understanding and manipulation of the rumen microbiome are hindered by poor culture collections and a lack of effort placed on culturing.

02. Hungate Collection

The Hungate collection project sequenced 410 rumen microbes (2018), providing a step-change in our understanding of the rumen microbiome.



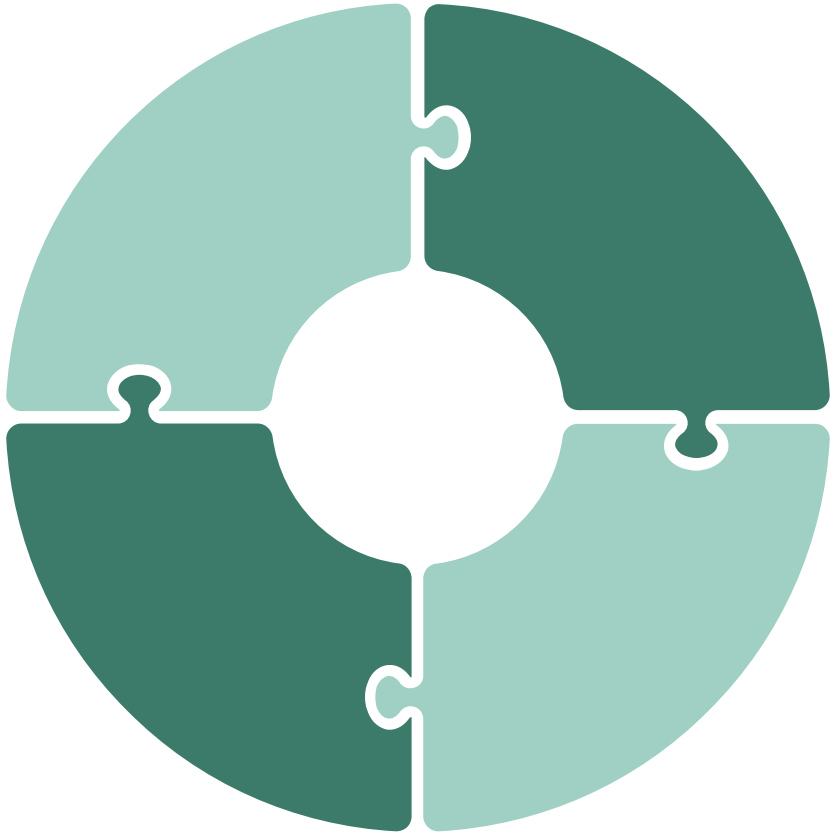
WHAT DO WE GAIN?

Rumen function

Ability to understand rumen microbial function

Feed interaction

Mechanistic understanding of the action of feed interventions to mitigate methane

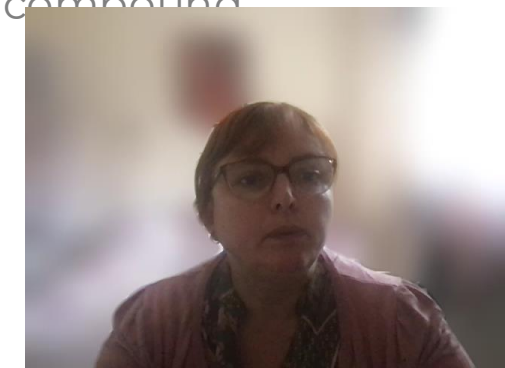


Hinder methanogensis

Provision of potential direct-fed microbials to re-direct hydrogen away from methanogenesis

Discovery

Microbial resource availability for bioactive compound discovery.



THE PLAN

Novel rumen bacteria characterization

Isolate, phenotype and genotype novel rumen bacteria from countries across the world

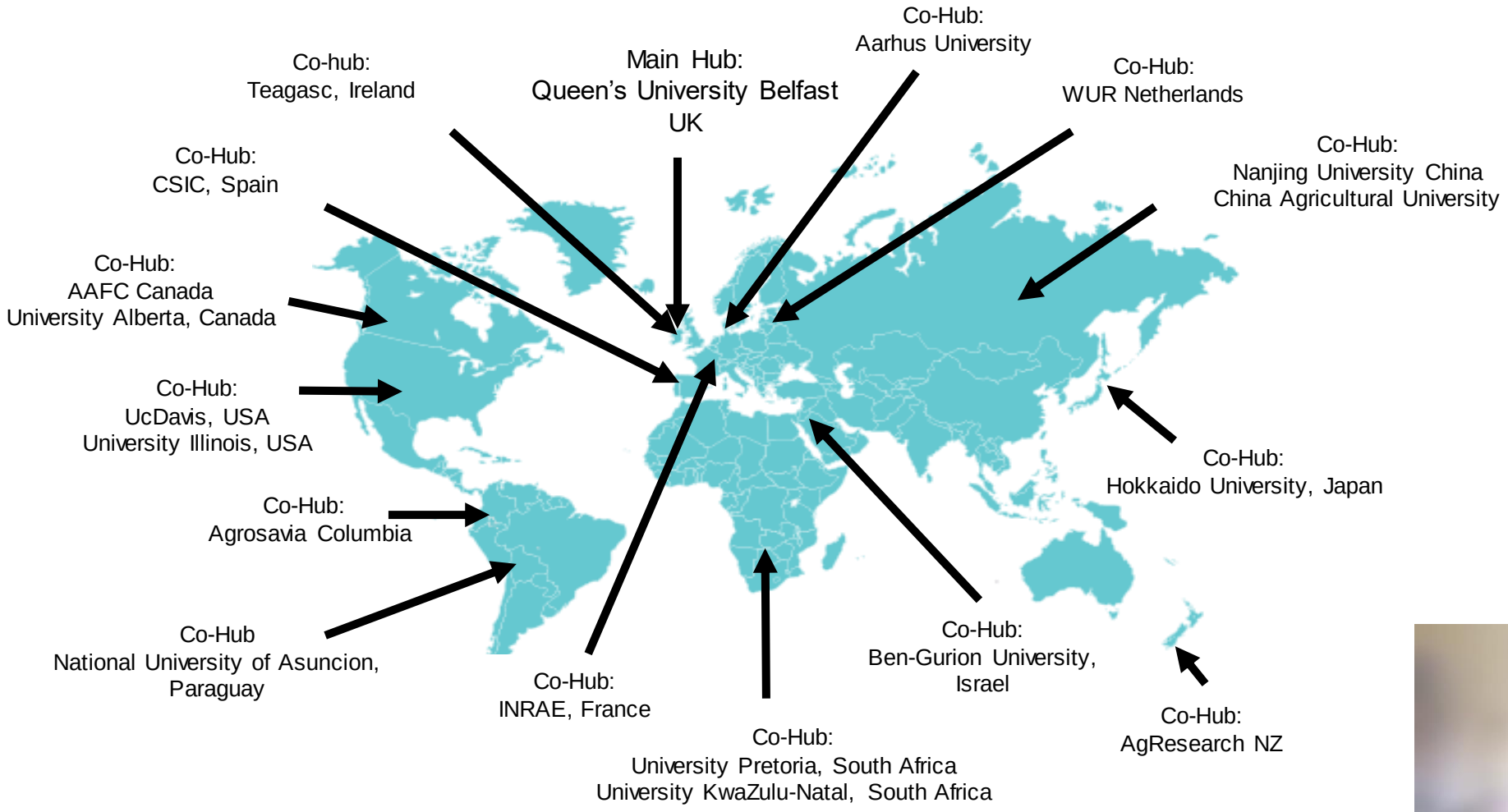
Culture hubs

13 ‘culture hubs’ across the world, with Queen’s University Belfast being the central managerial hub, will manage isolates

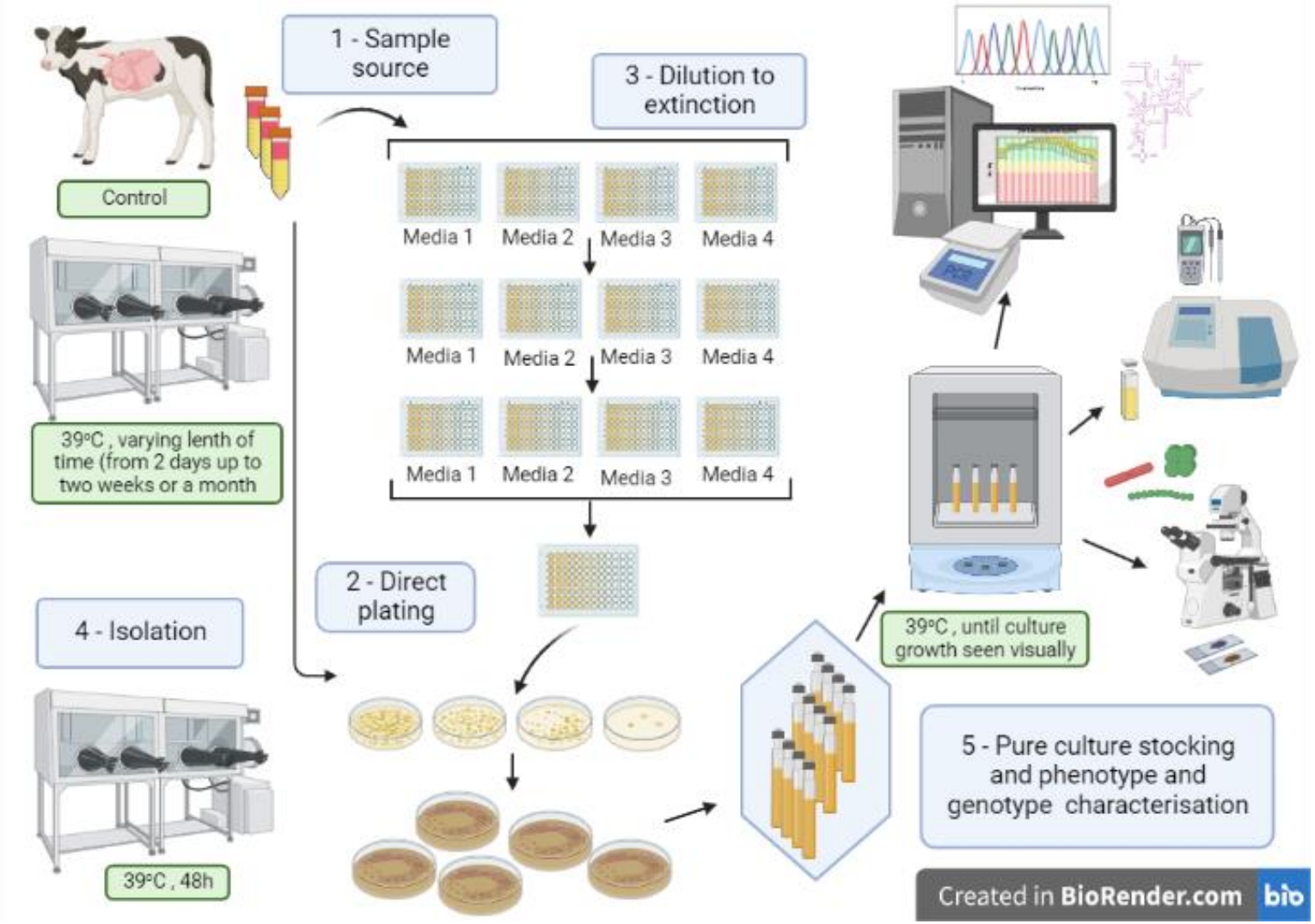
Open access

Isolates will be deposited in an open-access culture collection such as ATCC or DSMZ. Likewise, their genomes will be deposited in open-access databases.

GLOBAL CULTURE HUBS

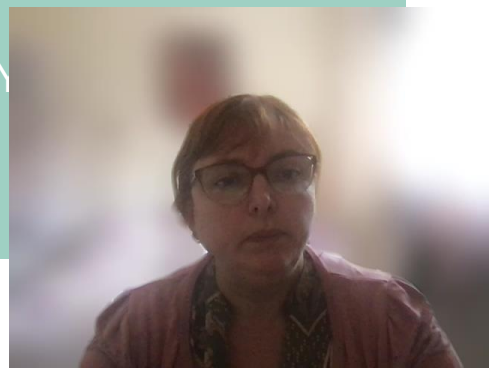


RUMEN GATEWAY



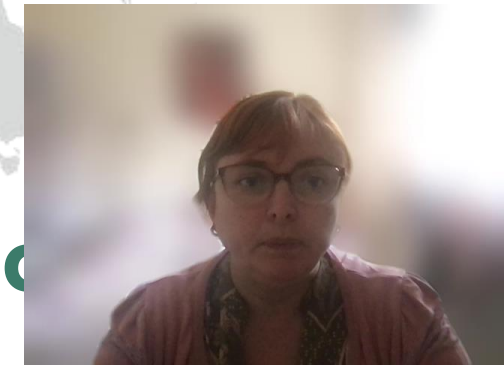
Media

- · Brain Heart Infusion
- · Hobson's M2 medium
- PC basal medium
- RM02 medium ·
- M10 medium
- Peptone Y

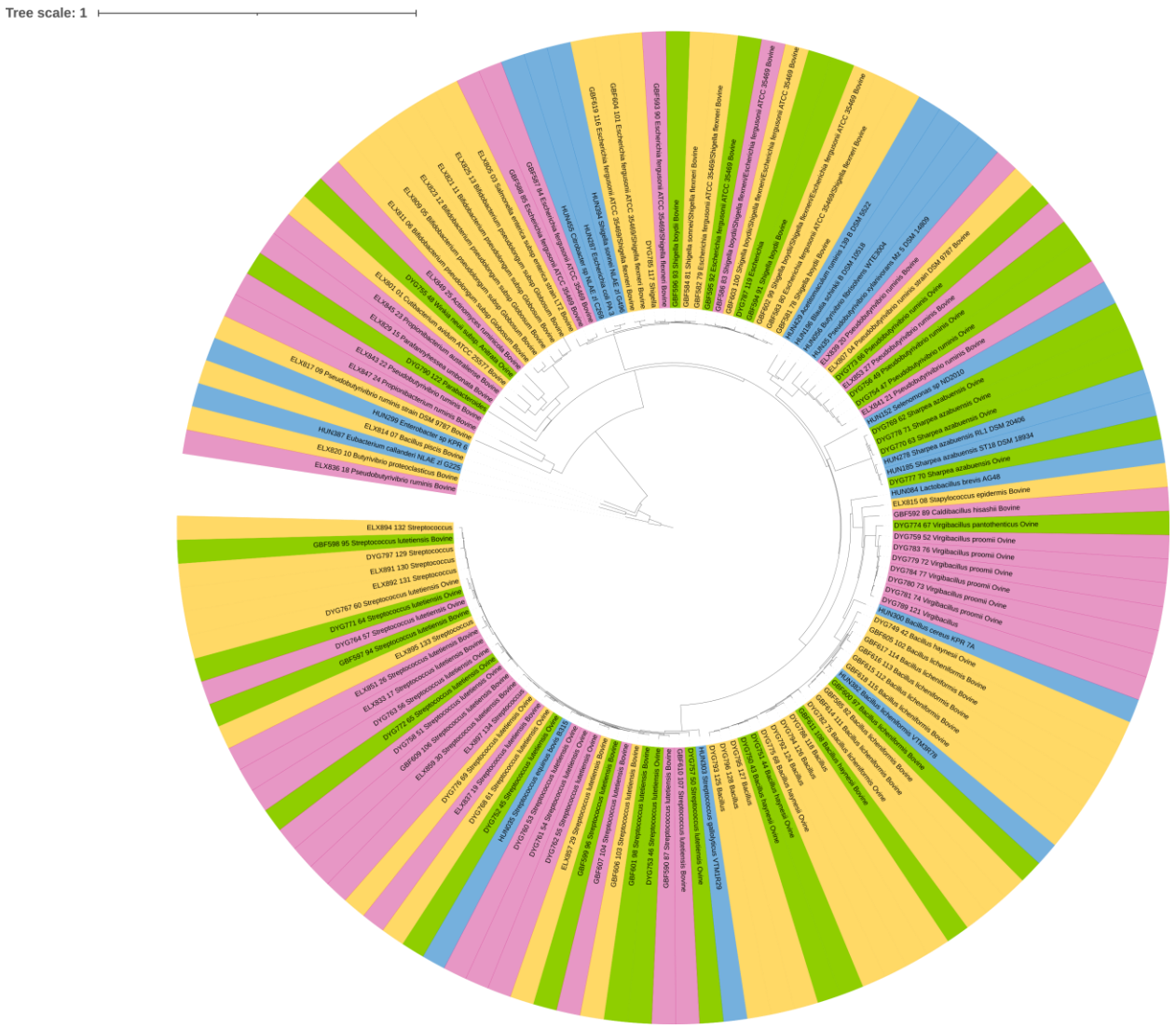


Open to new partners

S.Huws@



RUMEN GATEWAY: QUB data to date



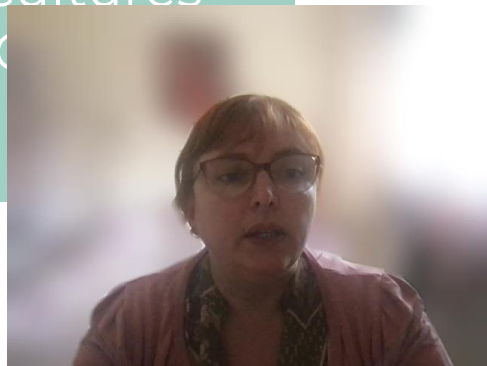
Green: Hobson M2 medium

Purple: PC basal medium

Yellow: BHI medium

Blue: Hungate collection

- 134 rumen bacterial isolates, based on 16S rDNA sequences.
- Some of the cultures match to MA sequences



The Queen’s University Belfast team

Principal Investigator: Professor Sharon Huws

Principal Manager: Dr James Pickup

PDRA: Phenotyping

Principal Scientist: Dr Fernanda Godoy Santos

PhD Student: Theano Stoikidou