



HAL
open science

NEW INSIGHTS ON RELATIONSHIPS BETWEEN FODMAPS INTAKE, GUT MICROBIOTA AND SEVERITY OF SYMPTOMS IN IRRITABLE BOWEL SYNDROME

Julien Tap, Muriel Derrien, Hans Törnblom, Nicolas Pons, Stephanie Cools-Portier, Joël Doré, Boris Le Neve, Lena Ohman, Magnus Simrén

► To cite this version:

Julien Tap, Muriel Derrien, Hans Törnblom, Nicolas Pons, Stephanie Cools-Portier, et al.. NEW INSIGHTS ON RELATIONSHIPS BETWEEN FODMAPS INTAKE, GUT MICROBIOTA AND SEVERITY OF SYMPTOMS IN IRRITABLE BOWEL SYNDROME. International Human Microbiome Consortium Congress, Nov 2016, Houston, United States. hal-03825707

HAL Id: hal-03825707

<https://hal.inrae.fr/hal-03825707>

Submitted on 22 Oct 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



UNIVERSITY OF
GOTHENBURG



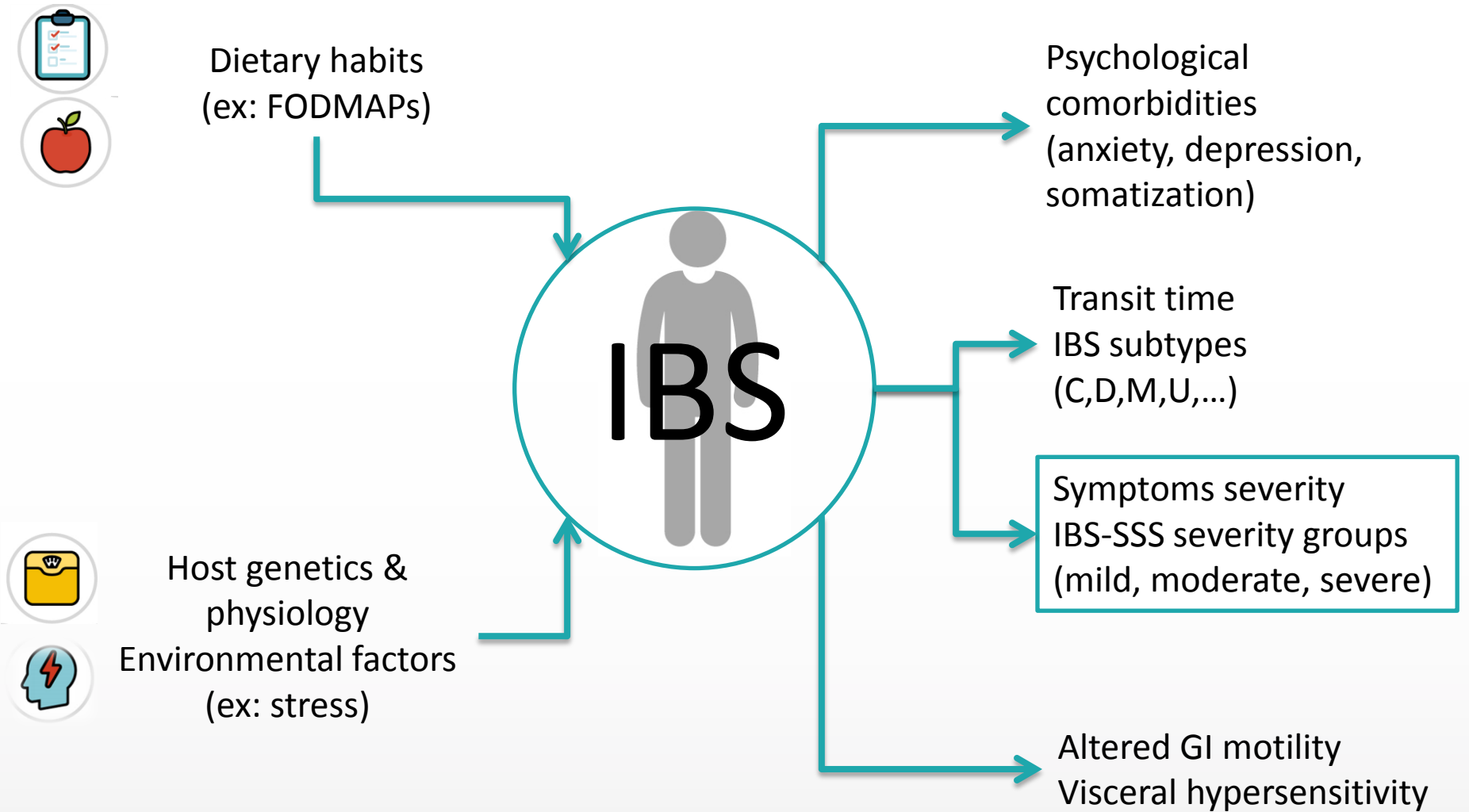
DANONE
NUTRICIA
RESEARCH

NEW INSIGHTS ON RELATIONSHIPS BETWEEN FODMAPS INTAKE, GUT MICROBIOTA AND SEVERITY OF SYMPTOMS IN IRRITABLE BOWEL SYNDROME

Julien Tap

Muriel Derrien, Hans Törnblom, Nicolas Pons, Stéphanie Cools,
Joël Doré, Boris Le Nevé, Lena Öhman, Magnus Simrén

COMPLEXITY OF IRRITABLE BOWEL SYNDROME (IBS)

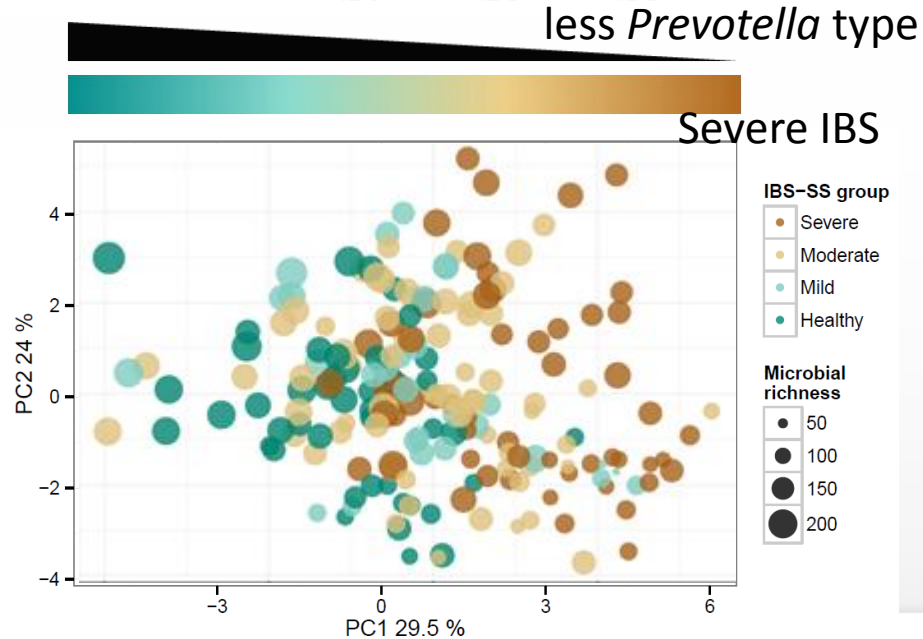
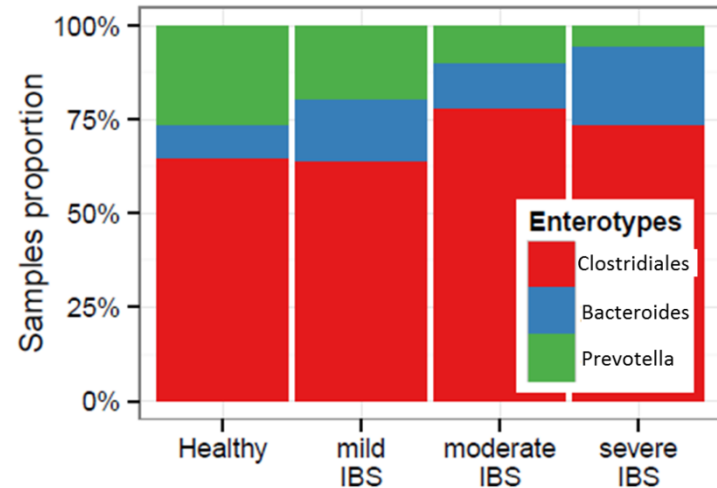
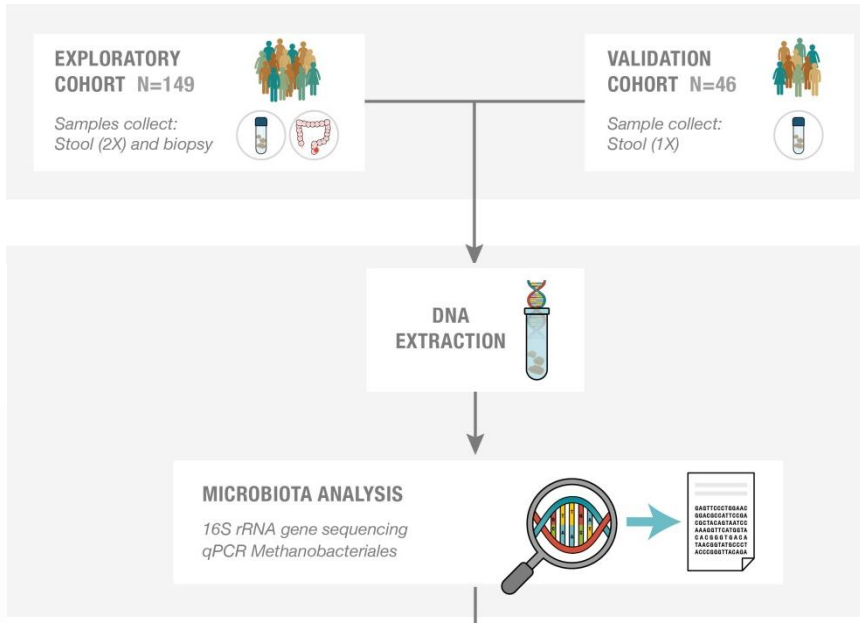


STUDY SCHEME

Je rajouterai une slide sur le process utilisé en terme analytique

- Nombre échantillons
- Analyses faites ...

SEVERITY OF IBS SYMPTOMS IS LINKED WITH GUT MICROBIOTA



Gastroenterology

Available online 7 October 2016

In Press, Accepted Manuscript — Note to users



Identification of an Intestinal Microbiota Signature Associated With Severity of Irritable Bowel Syndrome

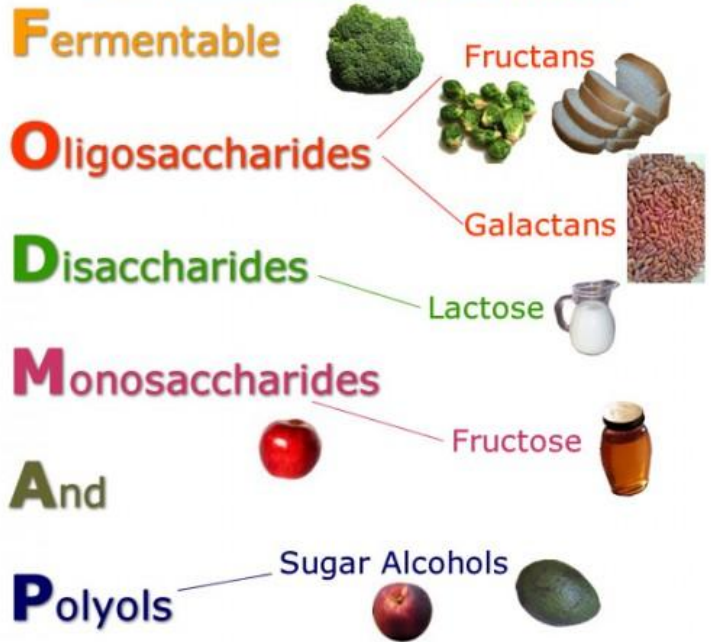
Julien Tap^{1,2,*}, Muriel Derrien¹, Hans Törnblom^{3,4}, Rémi Brazeilles¹, Stéphanie Cools-Portier¹, Joël Doré², Stine Störsrud³, Boris Le Nevé¹, Lena Öhman^{3,5,6,#}, Magnus Simrén^{3,4,7}

90 bacterial OTUs selected

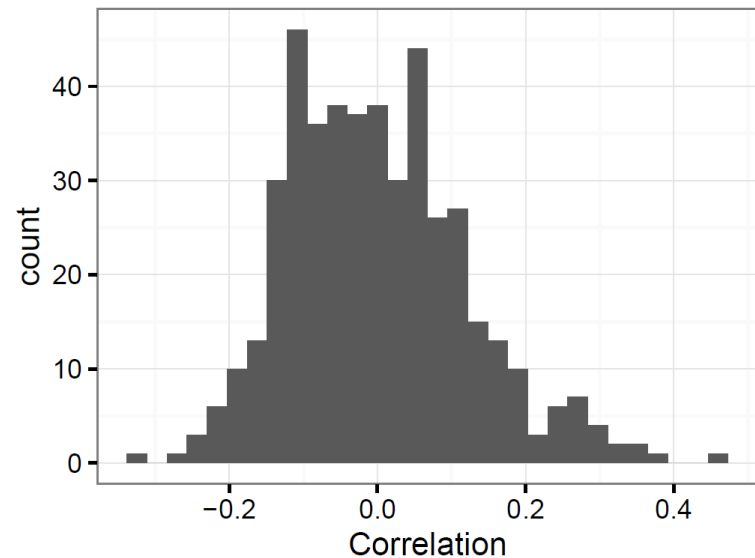


IBS SEVERITY AND INTAKE OF FODMAPS

IBS may be helped by keeping these FODMAPs food to a minimum
<http://blissfulwriter.hubpages.com/t/31f135>



... but no obvious link was found between IBS severity microbial OTU signature and intake of FODMAPs in our study

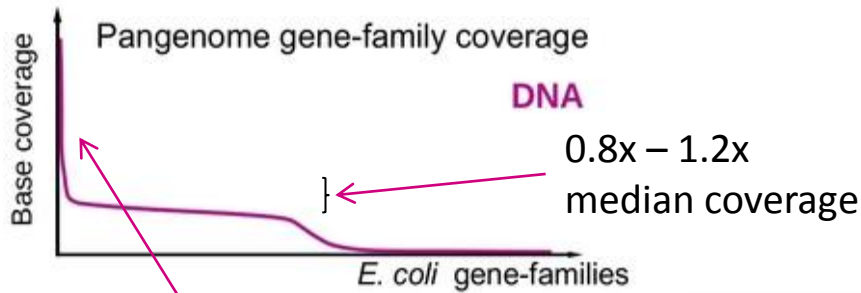


Is there a link between IBS severity, FODMAPs intake and microbiota genes content ?

FROM BACTERIAL SPECIES TO GENOMIC DIVISIONS USING DIRECT METAGENOMICS SEQUENCING

1) Convert coverage information to presence absence matrix

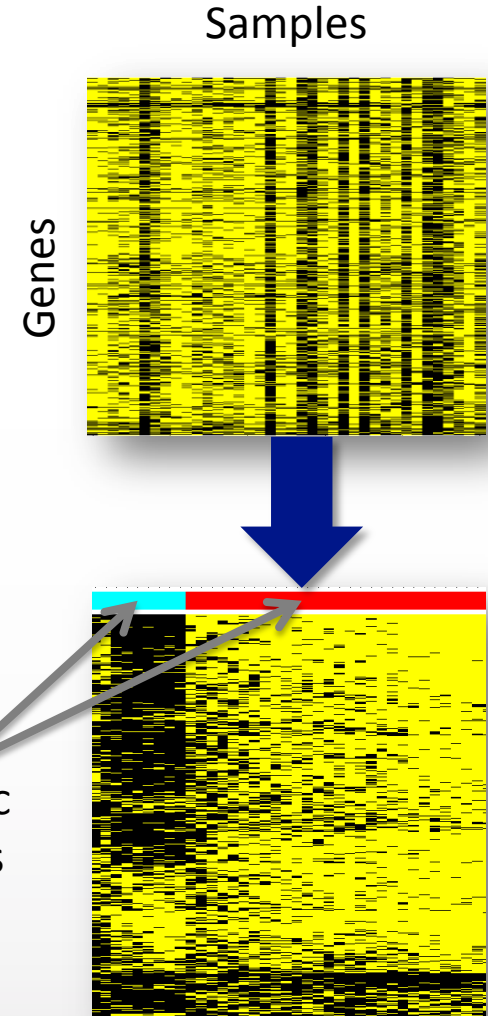
PanPhlan method adapted to SOLiD mapping data



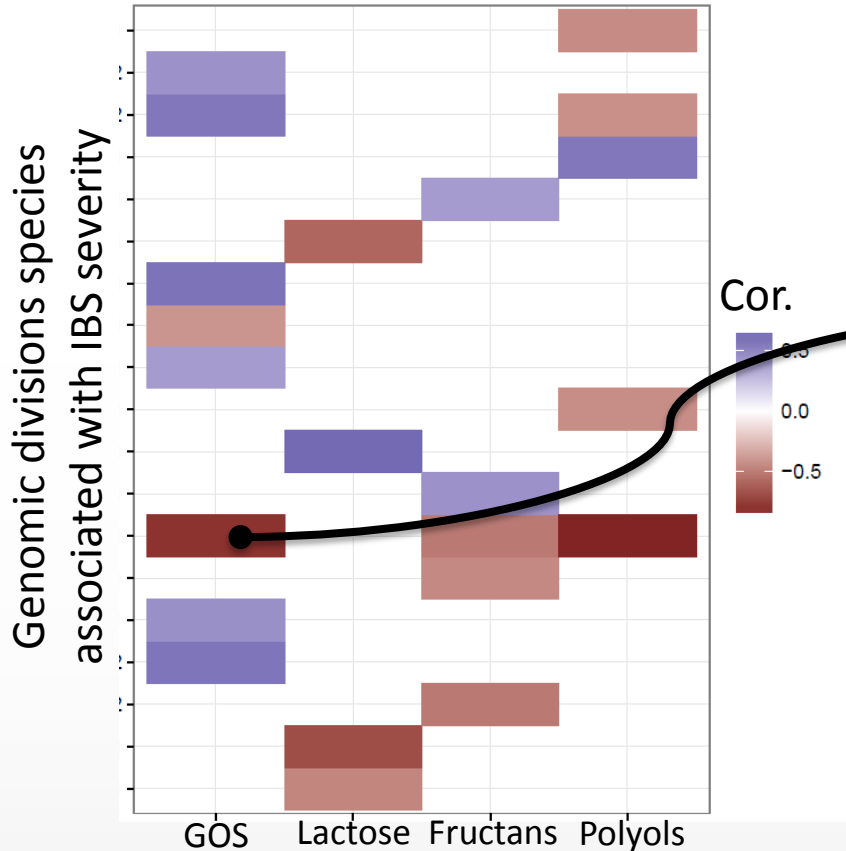
Multi copy genes

2) Detect Genomic division within metagenomics species

Bernoulli mixture model
Block EM algorithm
(Bhatia et al. Blockcluster.)

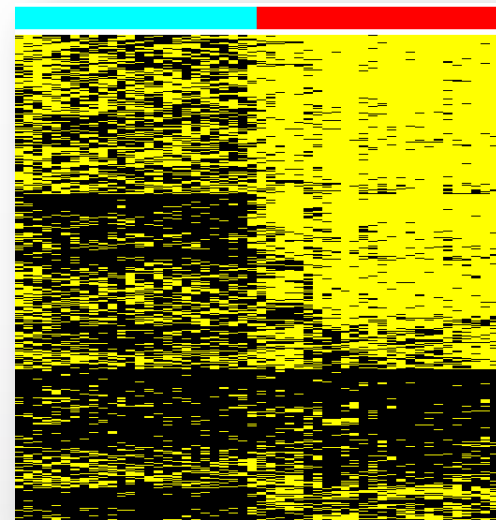


INTAKE OF FODMAPS IS ASSOCIATED WITH SOME GENOMIC DIVISIONS OF IBS SEVERITY MICROBIOTA SIGNATURE

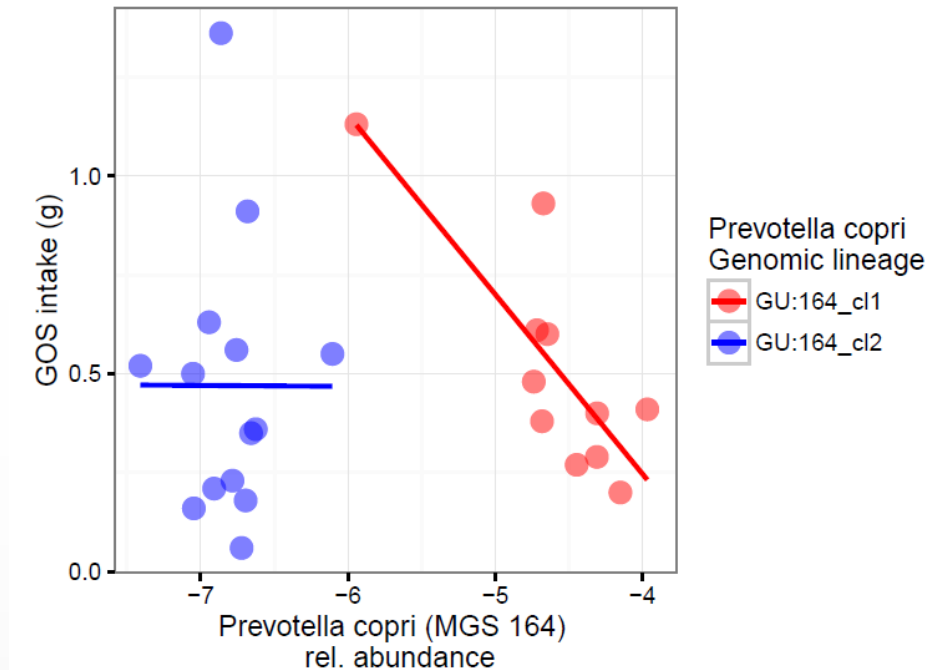
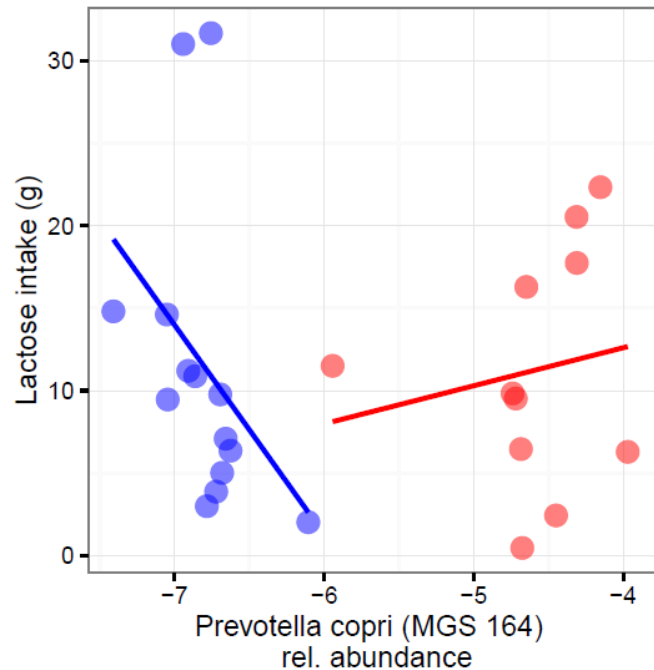


Correlation strength between FODMAPs and Genomic Division higher than bacterial OTU analysis

Prevotella copri genomic division



PREVOTELLA COPRI GENOMIC DIVISIONS DIFFERENTLY ASSOCIATE WITH INTAKE OF FODMAPS

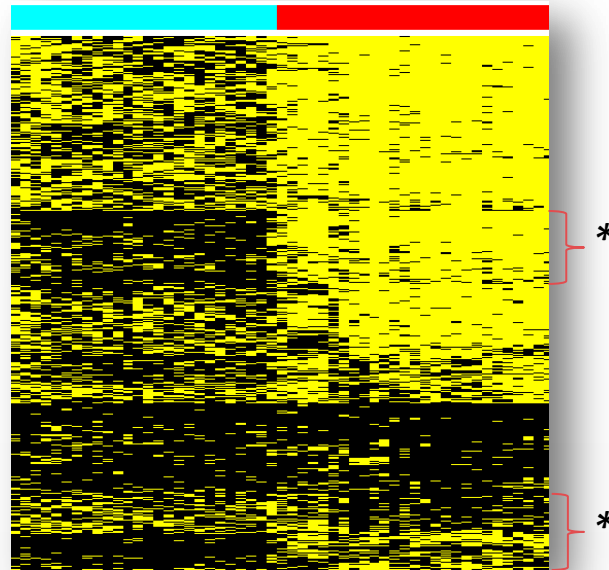


PREVOTELLA COPRI GENOMIC DIVISION METABOLIC PATHWAYS

Prevotella copri
genomic division

Prevotella copri cl2

Amino acid degradation
Succinate production
(may promote pathogens)



Prevotella copri cl1

Glycolyse hydrolase
Sucrose degradation
Sulfate reduction

*Different genes content was detected between the two genomic divisions

At genomic division level, links can be found between IBS severity, FODMAPs intake and metabolic pathway.

ACKNOWLEDGMENTS



UNIVERSITY OF
GOTHENBURG

L. Öhman
H. Törnblom
M. Simrén



INRA
SCIENCE & IMPACT

J. Doré
N. Pons



**DANONE
NUTRICIA
RESEARCH**

R. Brazeilles
C. Chervaux
S. Cools-Portier
M. Derrien
B. Le Nevé