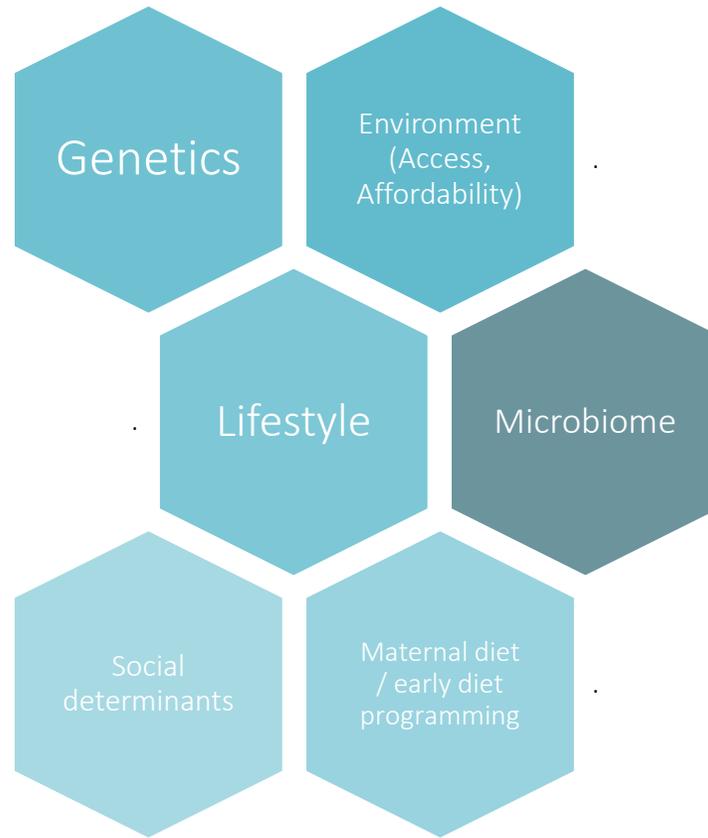


Microbes in, energy out

Does microbiota science play a role in obesity and type 2 diabetes?

Jaimie Hemsworth-Hummelen, RD PhD

Body weight and obesity is a dynamic, multidimensional state





How the gut got its groove (microbiota)

Established in the first 3 years of life (during a precarious time of change)

Considered an organ and it contains as many as 25 times more genes than the human body

Dysbiosis, or a dramatic change in the balance of species, is significantly related to a variety of inflammatory conditions and loss in metabolic capacity

(Blottière, H. 2017)

The link with body weight and metabolism

- The gut microbiota is distinctly different in obese vs. lean adults
- Further, lean adults have what is called 'microbial richness' which means there is greater diversity and thus more genetic material found in their microbial community
- Lower richness = increased energy harvest, increased endotoxemia, low-grade inflammation, reduced insulin sensitivity



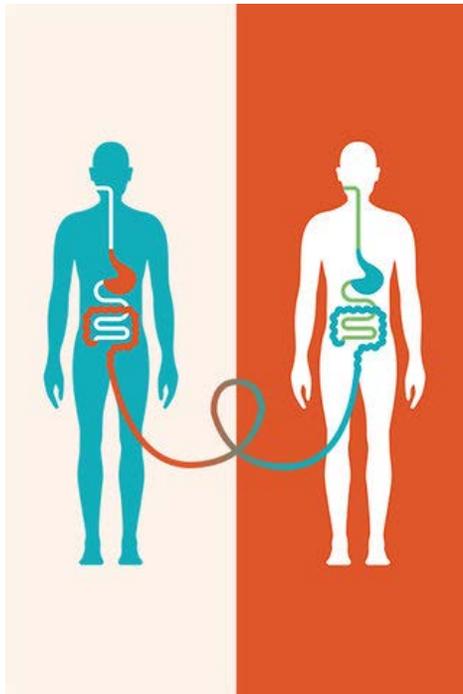
How does diet come into play?

- How does one lose bacterial gene richness?
 - A dietary pattern with potatoes, confectionery, and sugary drinks and low intake of fruits and yogurt was correlated with low microbial richness (Blottiere, H. 2017).
 - Gut microbial metabolites such as short-chain fatty acids (SCFAs) and succinate, from the fermentation of dietary fibre, have important metabolic functions
 - “The microbial metabolites derived from protein fermentation are most often considered detrimental for gut integrity and metabolic health” (Canfora, et.al. 2019)



Current microbial 'management' options for obesity and disordered glucose metabolism

1. Fecal transplant



One randomized controlled trial showed a causal relationship between microbiota and insulin resistance

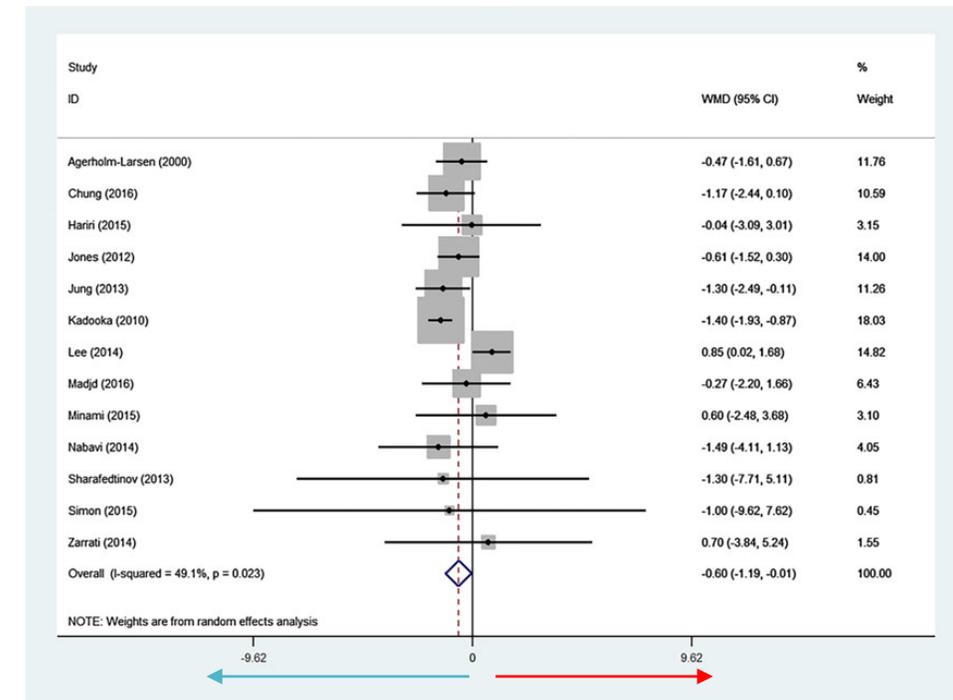
- Men with metabolic syndrome had a FMT with either their own fecal microbes (n=9) or that of lean participants (n=9)
- Insulin sensitivity significantly improved in men with the lean FMT after 6 weeks, while energy intake and expenditure remained the same as control participants
- They found that butyrate produced by a bacteria prevents the “leaky gut” and thus influences insulin sensitivity

(Vrieze, et.al. 2012 & de Groot 2017)

Current microbial 'management' options for obesity and disordered glucose metabolism

2. Probiotics / Prebiotics

- Systematic review & meta-analysis analyzing overall impact of probiotic supplementation on body weight, BMI, and fat-mass (Borgeraas, et.al. 2018).
 - Included studies up until 2016
 - 15 studies with 957 participants
 - Mostly fermented foods
 - Slight treatment effect of probiotics on body weight, BMI, and fat mass among obese and overweight participants



Current microbial 'management' options for obesity and disordered glucose metabolism

2. Probiotics / Pre-biotics

Research Paper

Probiotic With or Without Fiber Controls Body Fat Mass, Associated With Serum Zonulin, in Overweight and Obese Adults—Randomized Controlled Trial☆☆☆



Lotta K. Stenman^{a,*}, Markus J. Lehtinen^a, Nils Meland^b, Jeffrey E. Christensen^c, Nicolas Yeung^a, Markku T. Saarinen^a, Michael Courtney^c, Rémy Burcelin^c, Marja-Leena Lähdeaho^d, Jüri Linros^e, Dan Apter^f, Mika Scheinin^g, Hilde Kloster Smerud^b, Aila Rissanen^h, Sampo Lahtinen^a

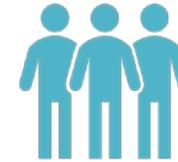
All participants consumed a iso-caloric smoothie and were instructed to mix either control (an indigestible fibre) or one of the intervention sachets + standard diet for 6 months

Probiotic: *Bifidobacterium animalis* ssp 420 (B420)
10¹⁰ CFU/ day

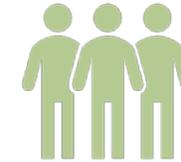
Prebiotic: Litesse Ultra polydextrose (LU)



Control
n=56



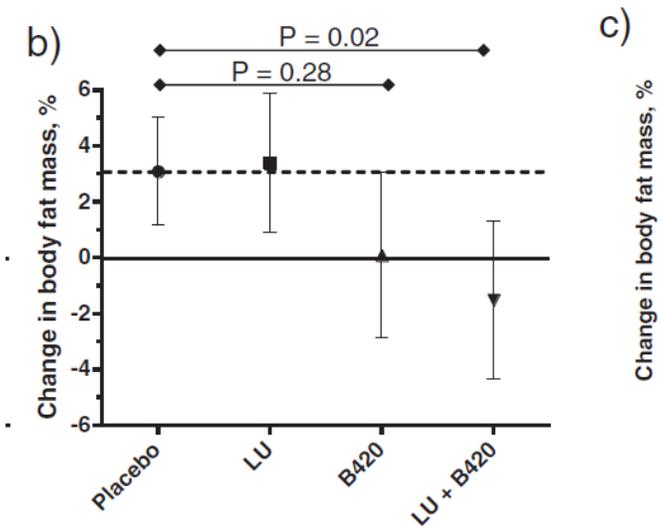
Prebiotic (LU)
n=53



Probiotic (B420)
n=48



Pre/Pro
n=52



Current microbial 'management' options for obesity and disordered glucose metabolism



3. Medication



Metformin results in a rapid altered gut microbiota composition which in turn improves insulin sensitivity and HbA1c > a calorie restricted diet (Wu,et.al. 2017)

How now, brown cow?

Microbiota management with clinical outcomes

- Provides a nuanced approach to counselling, i.e. an additional consideration in client's clinical picture
- Diets that promote a favourable gut microbiota: rich in indigestible carbohydrates, fruit, vegetables; low in animal-source protein, processed sugars and foods
- Probiotic – Bifidobacterium animalis B-420, 10^{10} CFU/day
- Monitor the results / science of the FMT

 **Metagenics**

[PRODUCTS](#) [EDUCATION](#)

[Home](#) > [Gastrointestinal Health](#)



UltraFlora Control

Targeted to Help Control Body Weight*

UltraFlora® Control is designed to help support body weight regulation delivering targeted probiotic support as Bifidobacterium lactis B-420™. It has been shown to help control body fat and body weight.*

Visit WhyUltraFlora.com for additional information.

Serving size: 1 Capsule†

Servings Per Container: 30

30 CAPSULES

BUY NOW

References

- Blottière, H. 2017. The gut microbiota and obesity. Chapter 11. Accessed Feb 19, 2019 from http://publications.iarc.fr/_publications/media/download/4595/7d5a9bb3f320f15f63af820c5cf5dba978ba215e.pdf
- Borgeraas H, et.al. 2018. Effects of probiotics on body weight, body mass index, fat mass and fat percentage in subjects with overweight or obesity: a systematic review and meta-analysis of randomized controlled trials. *Obes Rev.* Feb;19(2):219-232.
- Canfora EE, et.al. 2019. Gut microbial metabolites in obesity, NAFLD and T2DM. *Nat Rev Endocrinol.* Jan 22.
- de Groot, P.F. 2017. Fecal microbiota transplantation in metabolic syndrome: History, present and future. *Gut Microbes.* 8(3): 253–267.
- Stenman LK, et.al. 2016. Probiotic With or Without Fiber Controls Body Fat Mass, Associated With Serum Zonulin, in Overweight and Obese Adults-Randomized Controlled Trial. *EBioMedicine.* Nov;13:190-200.
- Vrieze A, et.al. 2012. Transfer of intestinal microbiota from lean donors increases insulin sensitivity in individuals with metabolic syndrome. *Gastroenterology*; 143:913-6.e7
- Wu, H, et.al. 2017. Metformin alters the gut microbiome of individuals with treatment-naive type 2 diabetes, contributing to the therapeutic effects of the drug. *Nat Med.* Jul;23(7):850-858.