

The gut microbiome; what is it and how can we change it?

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What is the gut microbiome?

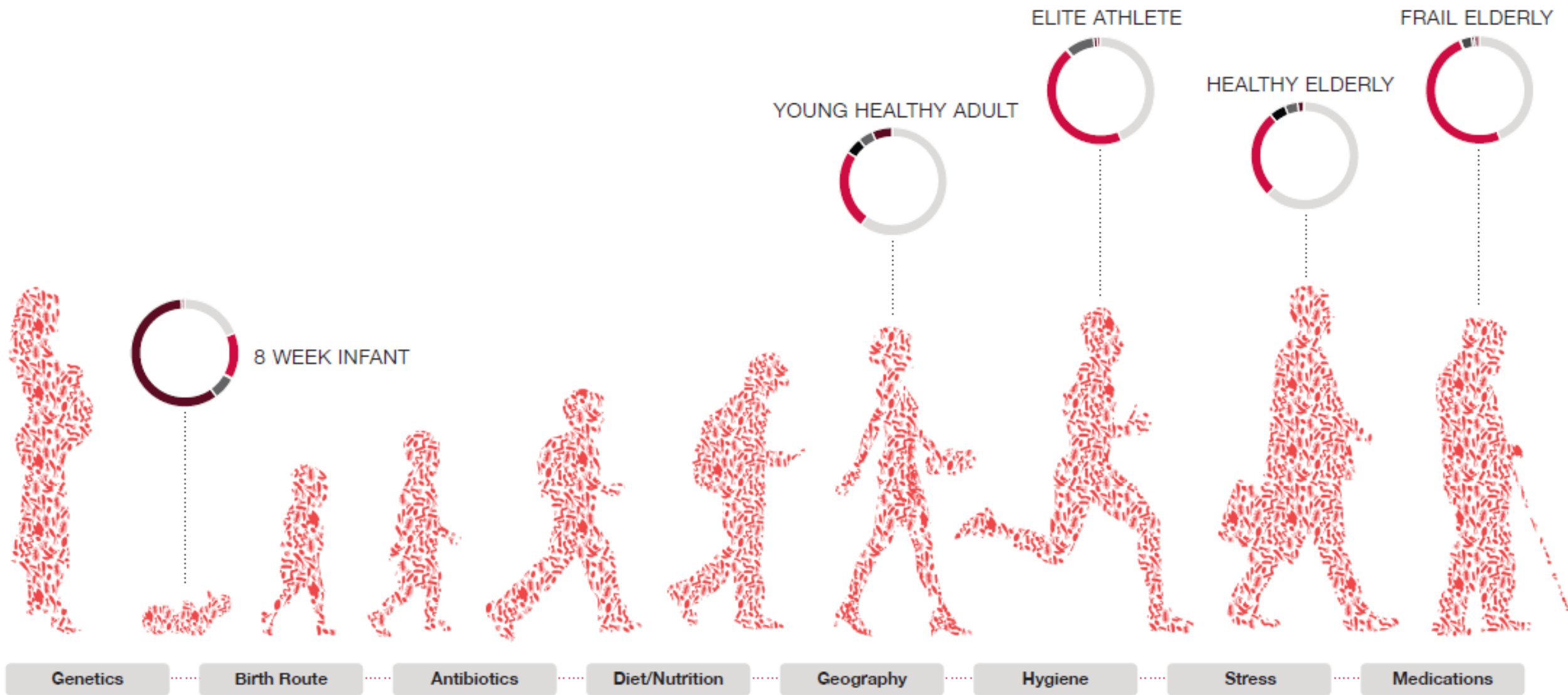


Human

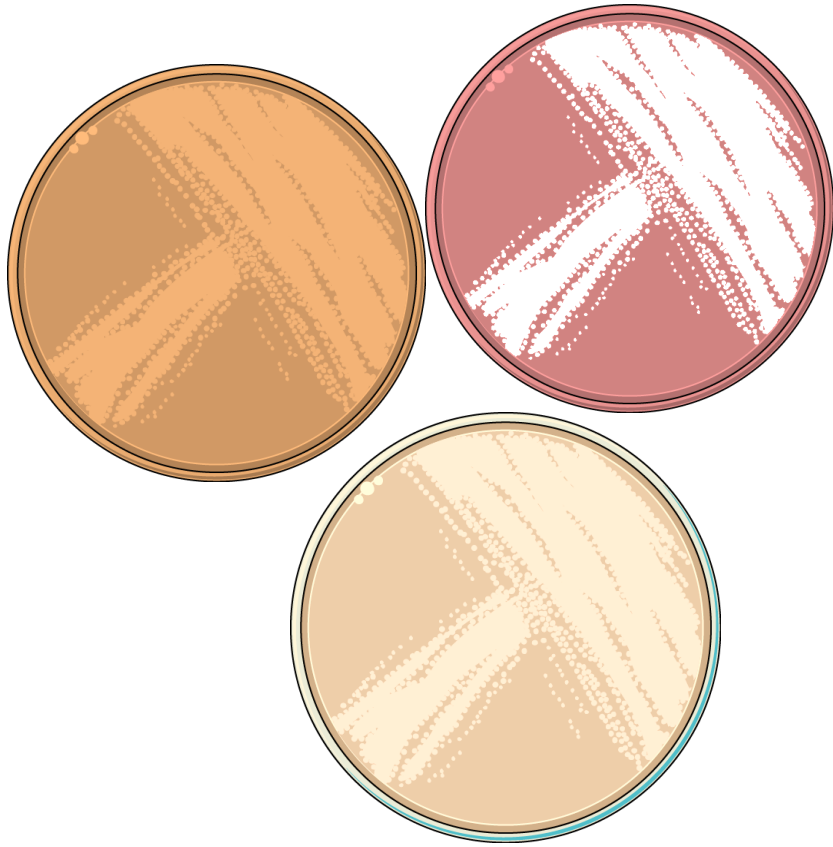
~10 trillion cells
~23 thousand genes

Microbiota

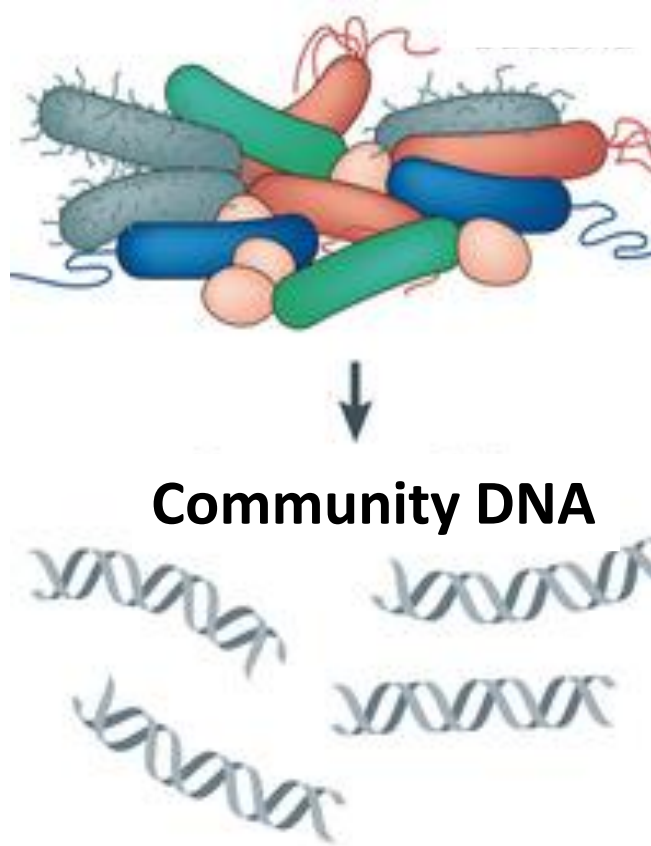
~100 trillion cells
~3 million genes



How we study the microbiome?



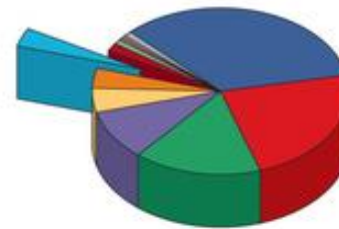
DNA sequencing based approaches



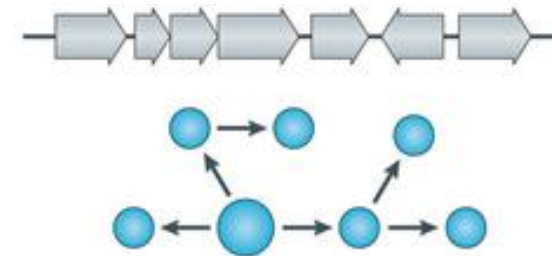
Whole metagenome
shotgun sequencing

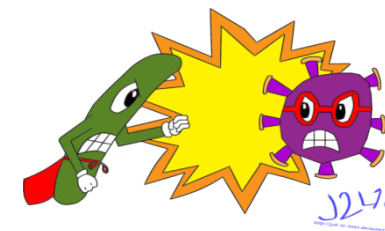
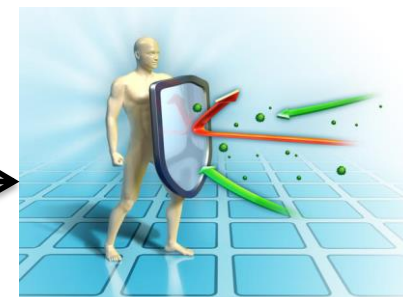
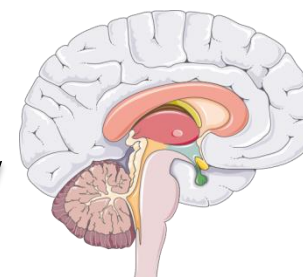
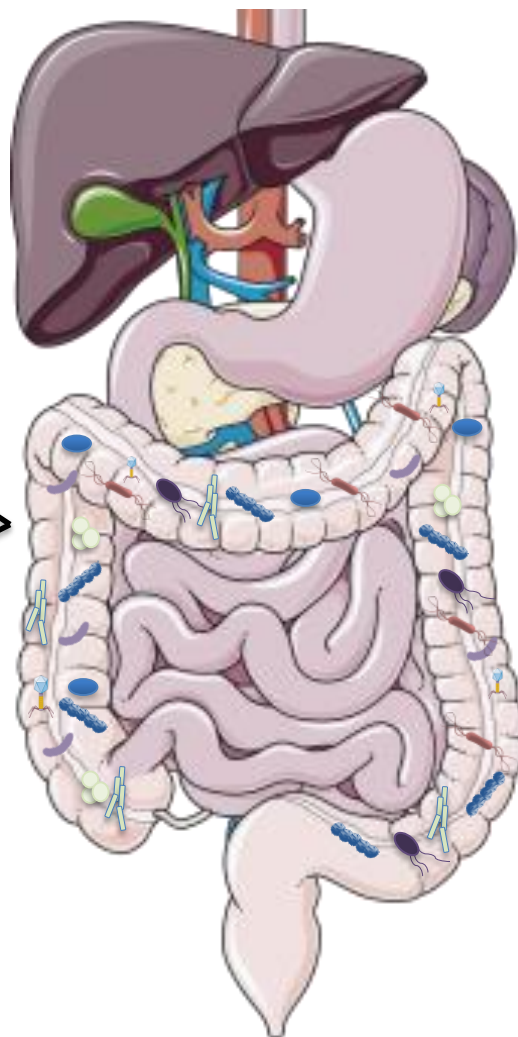
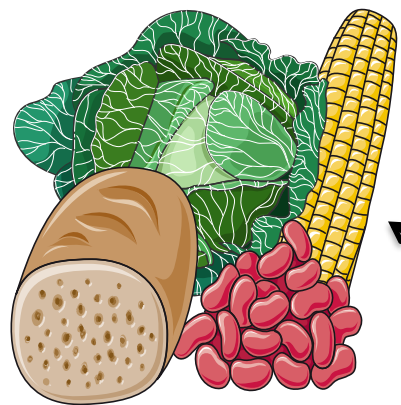


Community Composition



Genes or Pathways





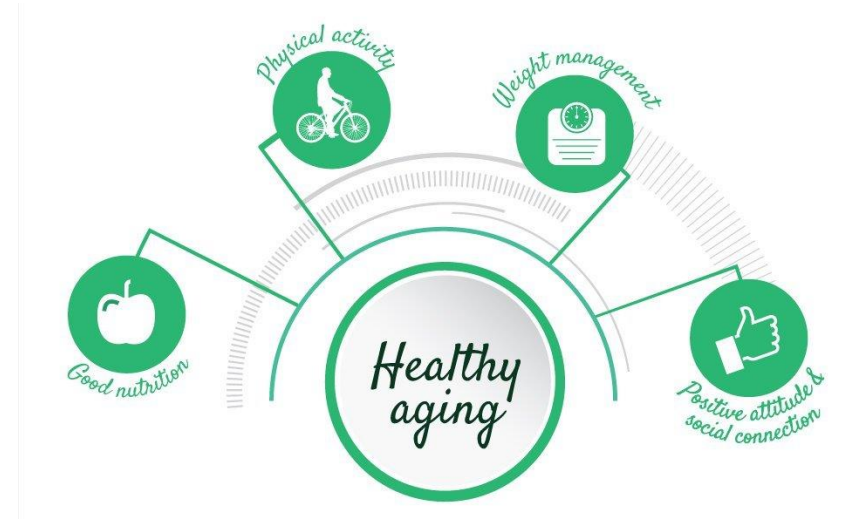


How can we change our microbiome?

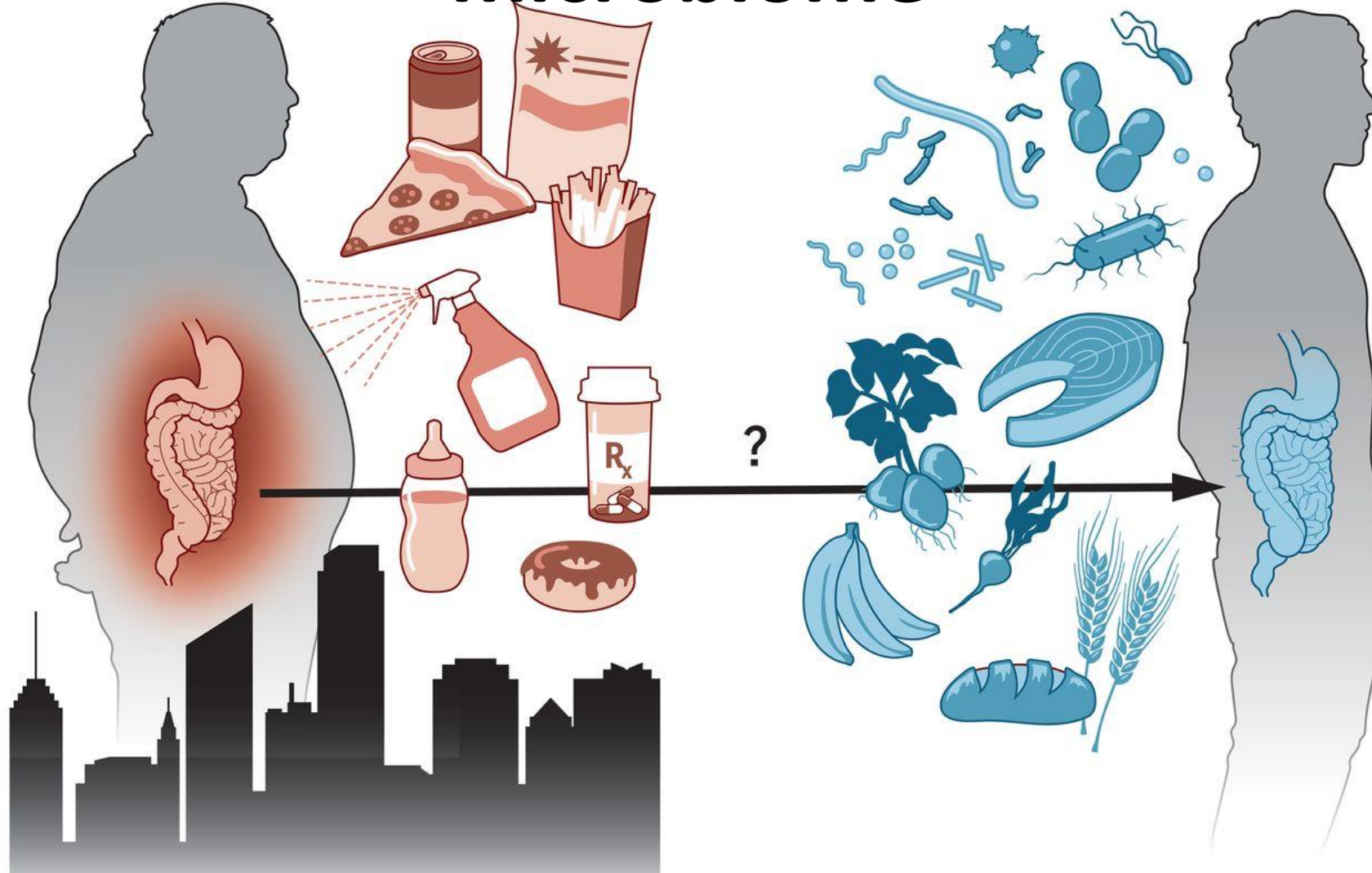
“Uncontrollable” factors



“Controllable” factors



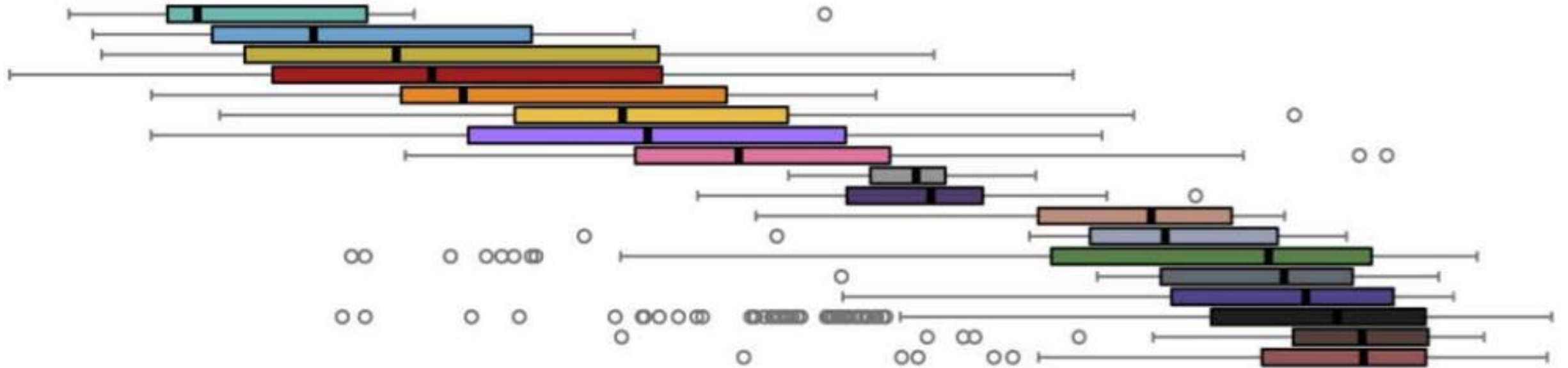
Industrialization affects the human gut microbiome



Industrialization affects the human gut microbiome

Traditional

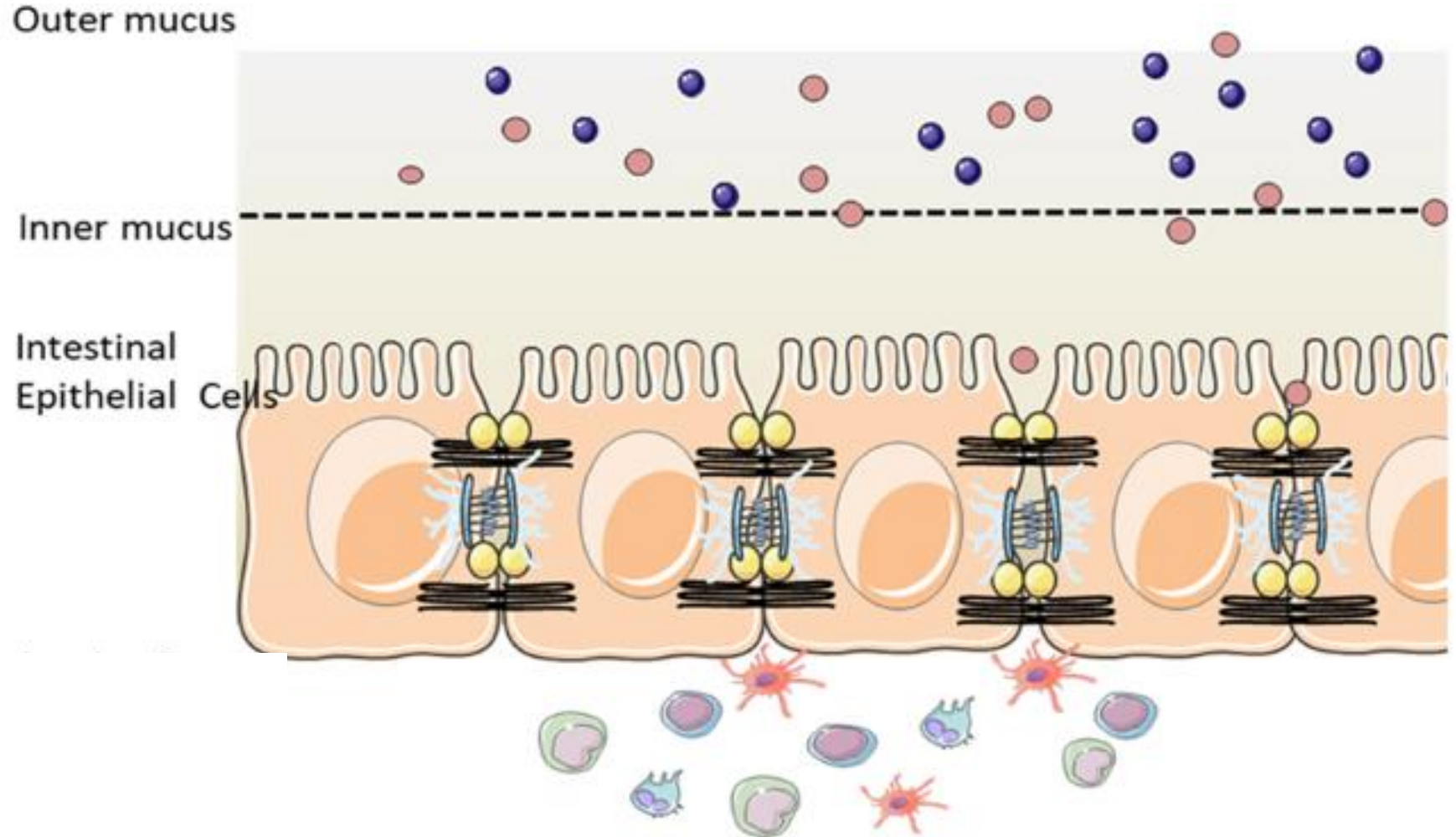
Industrialized



Higher alpha diversity

Lower alpha diversity

Probiotics



Prebiotics



estinal epithelial cell



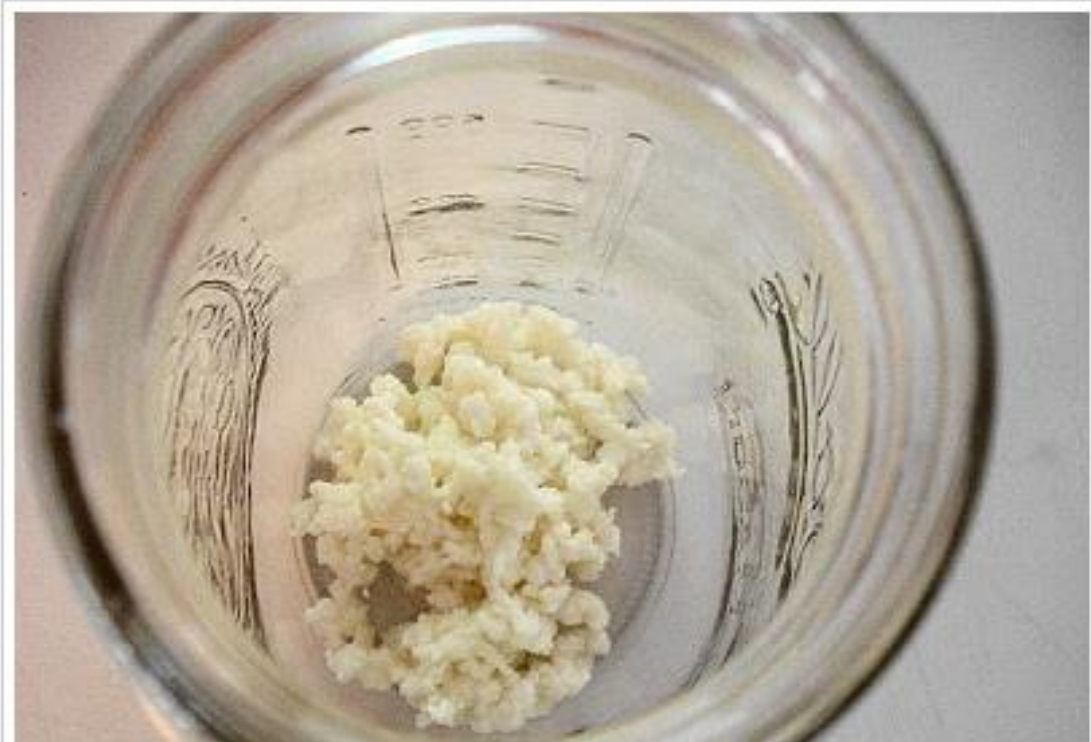
Jabbar Abdulhussein et al. (2018)

Fermented Food



Fermented foods - Fact vs. Fiction

My Anti-Cancer Treatments: Kefir



Does Your Body Need a Miracle?



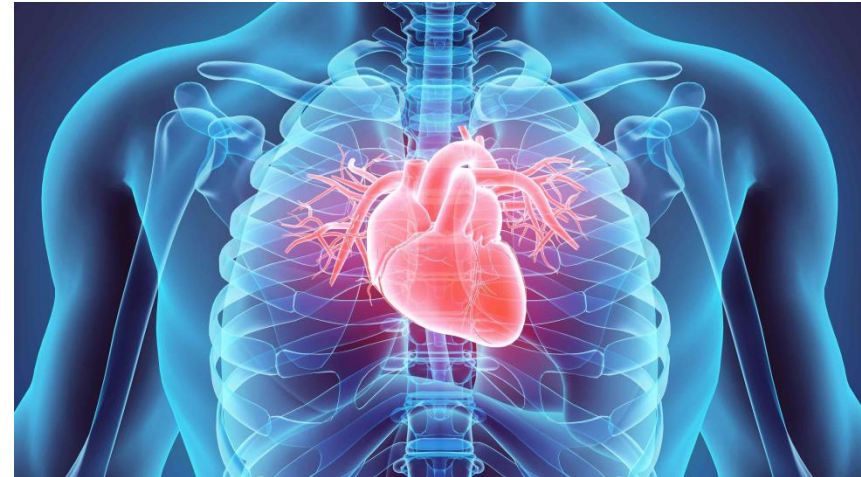
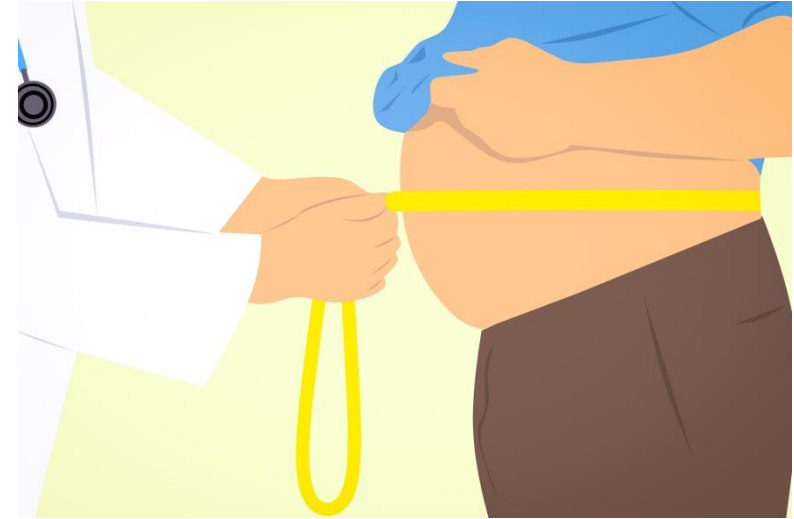
Kitchen

Kombucha the “Wonderdrink”

by KATIE on MARCH 6, 2013

Health Benefits?

- Type II diabetes
- Obesity
- Cardiovascular health
- Depression
- Osteoporosis
- Muscle soreness post training



Kefir

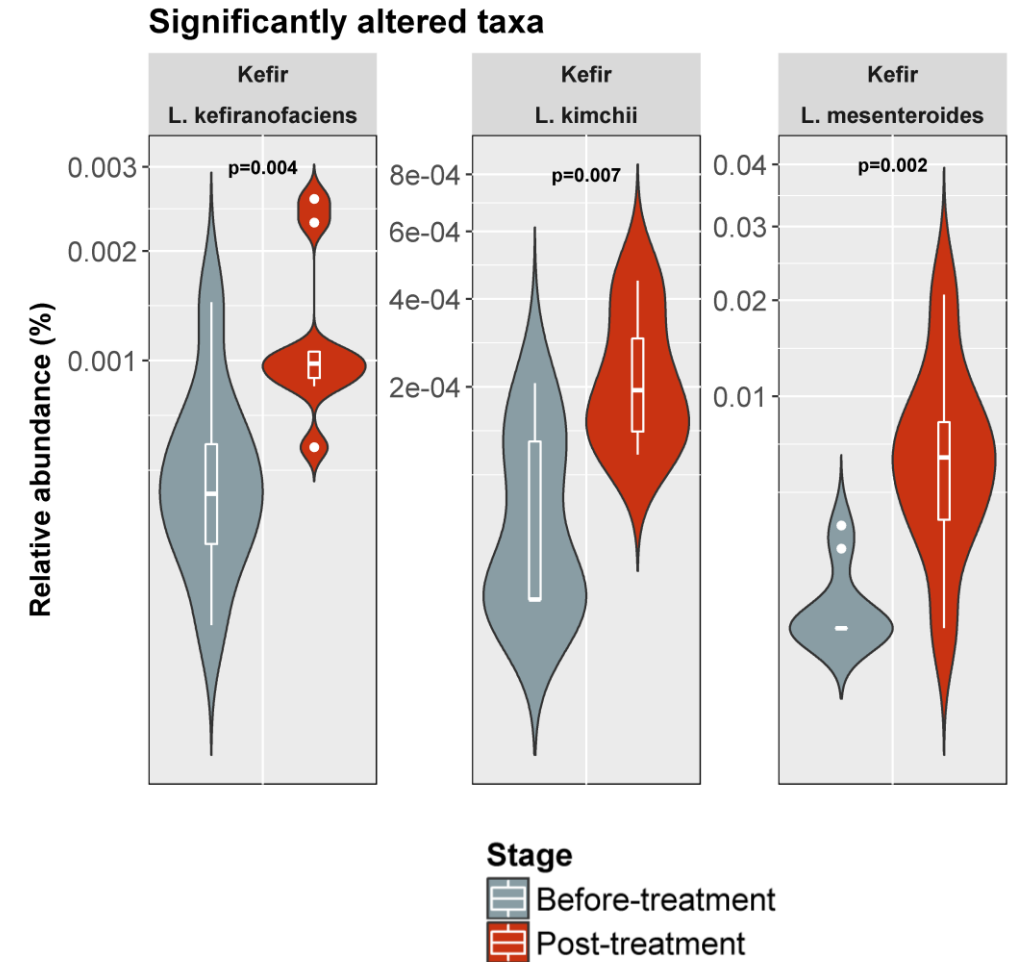


Health benefits of kefir?

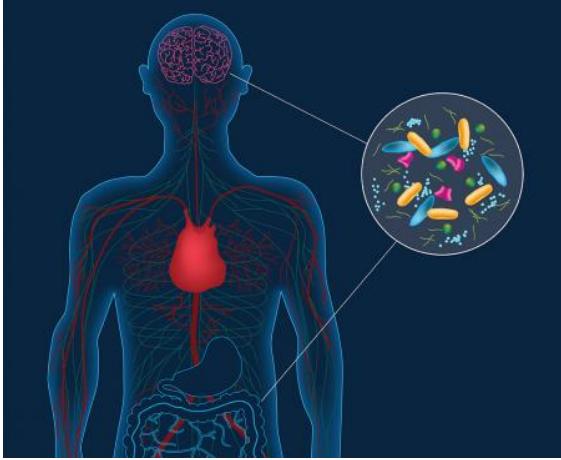
Survive gastric transit

Colonize the gut

Inhibit pathogens

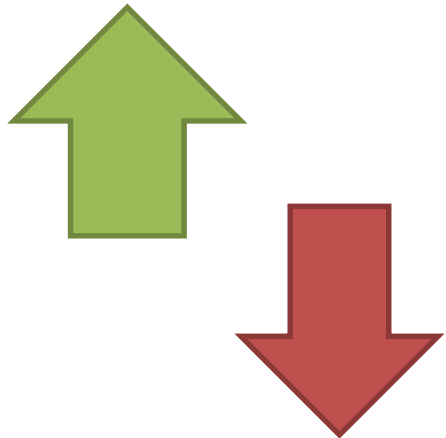


Kefir and the gut brain axis?



Kefir 1: Anti-depressant like effect

Kefir 2: Increased reward-seeking behaviour



Conclusions

What is the gut microbiome?

- **Microbes existing in our gut**
- **Huge numbers**
- **Changes throughout life and with disease**

Why are we interested in it?

- **Important for our overall health and existence**
- **Contributes to many functions**

How do we change it?

- **Range of factors**
- **Probiotics**
- **Prebiotics**
- **Fermented foods**
- **More research needed**



Prof. Paul Cotter
Dr. Orla O' Sullivan
Dr. Fiona Crispie
Cathy Lordan
John Leech
Dr. Aaron Walsh

Thanks for listening
Any questions?

