

Background

Socialness and the human gut

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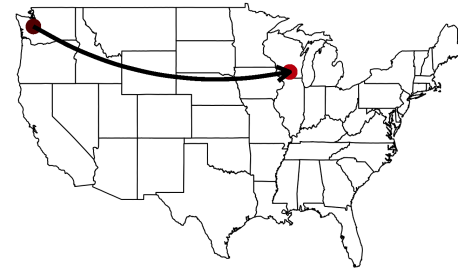
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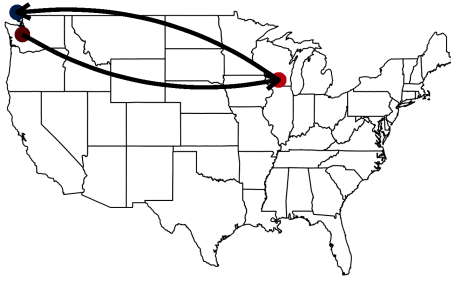
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Experiential
Data science for
Undergraduate
Cross-disciplinary
Education

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Complex microbial communities



Charis Tsevis

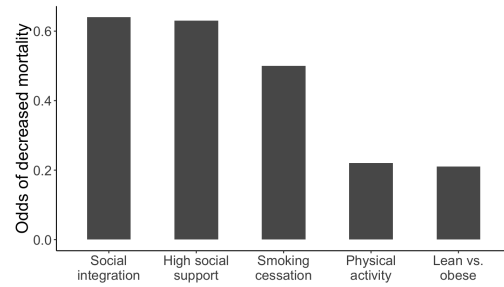
The human gut microbiome

- Specific species and overall communities associated with health and disease
- Impacted by factors like diet, age, environment, genetics, etc.
- What about social interactions?

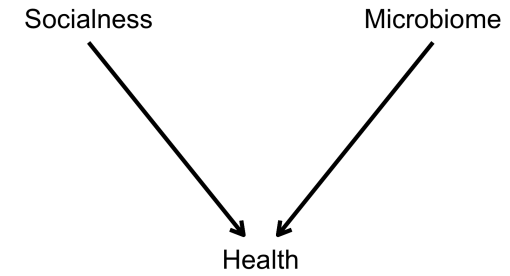
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Socialness can impact health

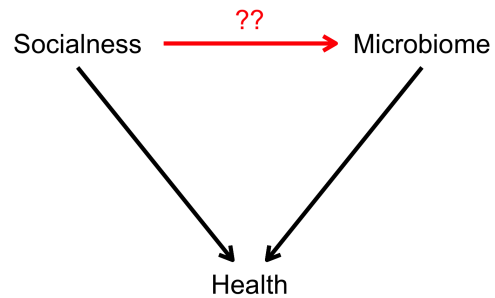


Holt-Lunstad *et al.* 2010. PLoS Medicine
Pantell *et al.* 2013. Am J Public Health



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- 1/3 of 1957 high school graduates in Wisconsin
- N = 10,317
- Later additions of siblings and spouses
- Surveys every ~10 yrs
- [Searchable database](https://www.ssc.wisc.edu/wlsresearch/documentation/browse/)

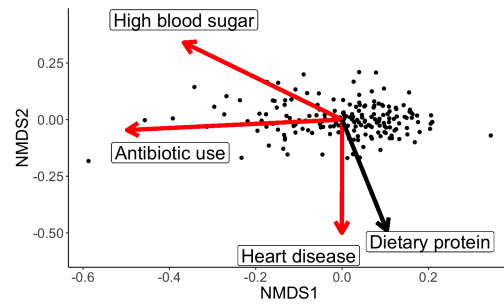
<https://www.ssc.wisc.edu/wlsresearch/documentation/browse/>

- Microbiome added in 2014
- N = 500
- 16S bacterial sequencing

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Overall microbiota impacted



Non-significant factors

Environment

- Non-spouse cohabitating persons
- House cleanliness
- Pets (dog, cat, other)

Diet

- Protein source (meat, chicken, seafood, etc.)
- Variety of fruits or vegetables
- Total fruits or vegetables

Health

- Frailty (walking speed)
- BMI
- High blood pressure
- Arthritis
- Cancer
- Stroke

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Impacts of close social relationships



Corrected for age, sex, dietary protein, and health

Impacts of close social relationships

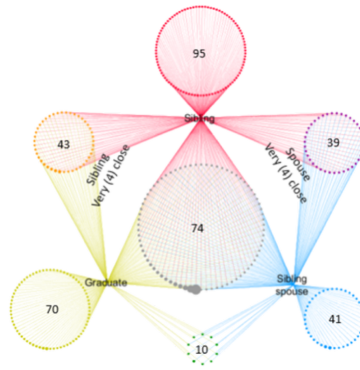


Corrected for age, sex, dietary protein, and health

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Shared microbes



Shared microbes and health?

Potentially beneficial

- *Akkermansia muciniphila*
- *Bifidobacterium* spp.
- *Collinsella aerofaciens*

Potentially harmful

- *Clostridium spiroforme*

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On-going questions

- Microbial functions?
- Links to health?
- Microbes as the cause or effect?

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