

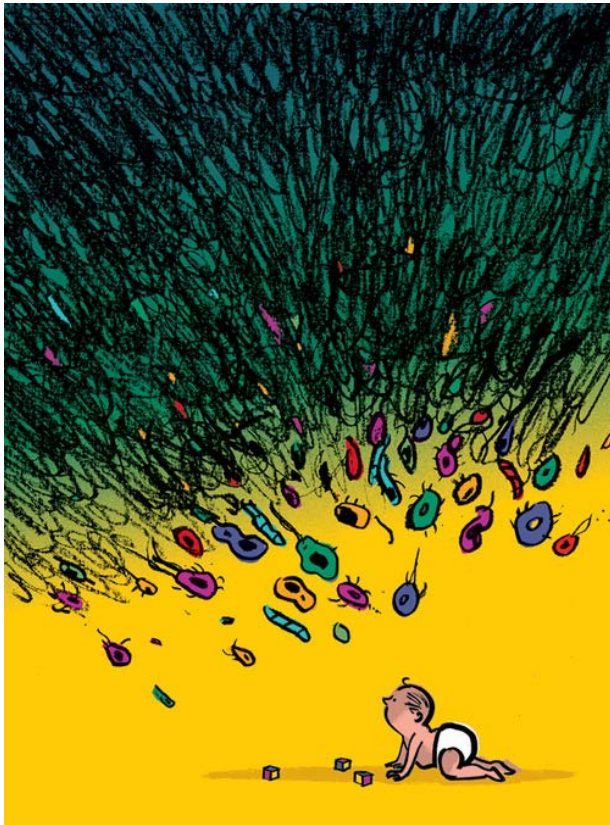
# Microbes are Everywhere



# Health

10-to-1 Microbes  
to our cells

Diversity protects





the salt

### Chowing Down On Meat, Dairy Alters Gut Bacteria A Lot, And Quickly



Shifting to a diet that's packed with pork, cheese and eggs has a big influence on the trillion of bacteria living in our guts, even after just a few days, new research shows. And some of these changes probably aren't so good. One type of microbe that flourishes under the meat-based diet has been linked to diseases in mice.

tuesday december 10, 2013

the salt

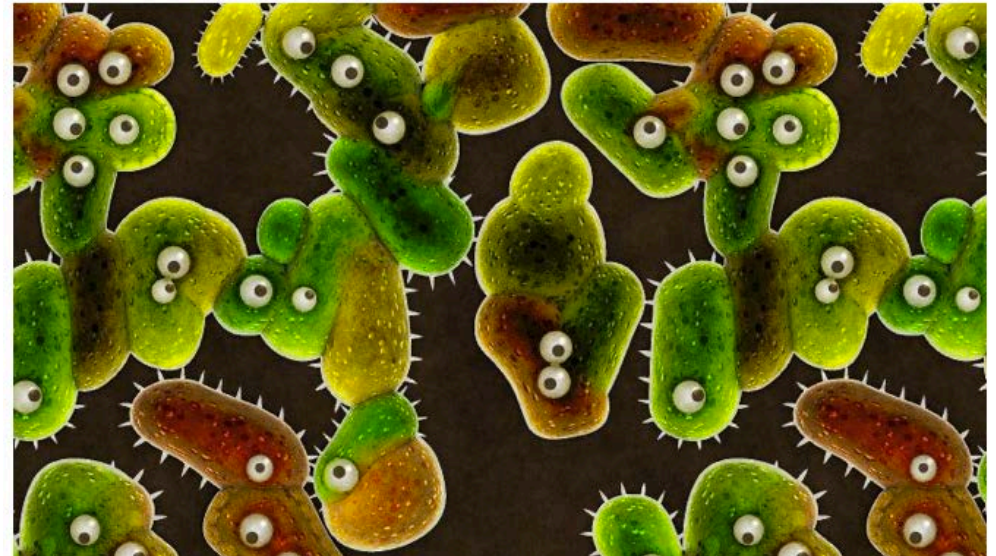
### Microbiome Candy: Could A Probiotic Mint Help Prevent Cavities?



Lacing a sugar-free candy with the right kind of bacteria might one day help fight off tooth decay, a study suggests. The experimental mint lowered the levels of cavity-causing bacteria in volunteers' saliva. But the microbe candy still has a long way to go before it reaches shelves at Walgreens.

## Building Design Influences Bacterial Growth

microbiome • By Brooke Borel • Posted 01.29.2014 at 5:00 pm 0 Comments



Germ

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GENETICS

### The Good Bugs: How the Germs in Your Body Keep You Healthy

A consortium of scientists has set about mapping the millions of bacteria that live in and on our bodies, keeping us healthy

By Alice Park @aliceparkny | June 14, 2012 | Add a Comment

# Applications

- Therapeutics for Disease, Obesity, Health
- Bioremediation of Environmental Contaminants
- Interventions to Prevent Disease Spread
- Biomedical, Environmental, and Electrical Engineers **NEEDED!**

# FIRST Course

- **ENVS 327: Develop YOUR OWN hypothesis and sequence DNA from your OWN samples (FOR FREE)**

Examples:

- How does one composting method affect the microbes and their degradation rate?
- Do indoor areas near the outside stay more diverse than the interior?
- How does nutrition affect our or an ant's microbial carbohydrate metabolism?

# SECOND Course

- **ECES4XX: Bioinformatics**
  - UNIX PROGRAMMING
  - Learn R and Python
  - Learn algorithms behind some of the fundamental algorithms
  - How to use algorithms to solve Genomics problems

# THIRD Course

- **ECES4XX: Statistical Analysis of Genomics**
  - Improve R skills
  - Learn Statistics
  - Learn Hypothesis Testing
  - Learn MACHINE LEARNING (SVMs, feature selection, etc.)

ANALYZE YOUR EXPERIMENTAL DATA

VALIDATE YOUR HYPOTHESES!

## 3-course sequence

- **ENVS 327: Molecular Ecology Laboratory**
  - **ECES4XX: Bioinformatics**
- } FALL  
2014
- **ECES4XX: Statistical Analysis of Genomics**
- } Winter  
2015