

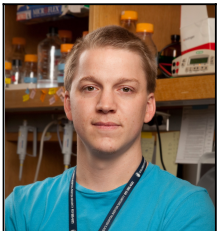
## Our Microbial Organ: The Good and Bad Bugs of the Human Gut

November 3, 2010

### Introduction

We often hear about bacteria in a negative context, such as the *E. coli* in contaminated spinach that made many people ill. However, the vast majority of bacteria that exist are not harmful to us. In fact, many of them are actually beneficial to our overall health. Today, we will tell you about our microbial organ, or the many bacteria that live inside our gut. First, Kevin will introduce bacteria and show you that bacteria are living many places on your body. Then Nadia will discuss some of the ways we know they keep us healthy, such as aiding in digestion and stopping the growth of harmful bacteria. Finally, Kyle will tell you about how scientists study these bacteria in the lab, and some new techniques that will help them to uncover more information. He will also talk about some interesting new treatments that have been developed based on our knowledge of the microbial organ.

### Speakers:



**Kevin Bonham** is a third year in the immunology program and studies the interface between microbes and the mammalian immune system. Specifically, he studies a class of receptors on the surface of immune cells that are able to detect the presence of bacteria, viruses and fungi. When not doing science, he is typically climbing rocks, hiking trails, or blogging about science at [scienceblogs.com/webeasties](http://scienceblogs.com/webeasties).



**Nadia Cohen** is a PhD candidate in Harvard Medical School's Immunology Program. She grew up in Brussels, Belgium, and received her Bachelor's degree in Biology at Imperial College in London in 2005. Nadia's dissertation research is aimed at understanding how different cells of the immune system interact to efficiently fight microbial infections of the lungs. When she is not in the lab, Nadia plays the cello and enjoys doing crosswords with friends.



**Kyle Perry** is a fourth year student in Harvard's Biological and Biomedical Science PhD Program. He is originally from Michigan and attended University of Michigan-Ann Arbor for his undergraduate studies. He works in Dr. Higgins lab, studying the growth of pathogen in the host cell environment. Outside of lab, Kyle plays hockey, paints, and participates in other SITN events.

## **Glossary:**

**Bacteria** - a simple, single celled organism

**DNA** - the genetic material that contains the blueprint for making the components of a cell and directing all of its actions

**Commensal** - an organism that lives on or inside of you but does not cause any harm (and may actually be beneficial to you)

**Pathogen** - an organism that causes disease

**Microbiome/microbial organ/microbiota** - all the bacteria that inhabit a certain environment

**Digestion** - mechanical and chemical process of breaking down food into usable energy and vitamins

**Enzymes** - small machines that play an important role in breaking down food during digestion

**Ecological niche** - the specific part of an environment where a given species lives

**DNA sequencing** - a process by which scientists can read the barcode of an organism's DNA and use that information to identify the organism

**Probiotics** - live bacteria that are intentionally consumed to confer some health benefit

**Human microbiome project** - a large, government funded project that will collect data about the microbiomes from several parts of the body of many different individuals

## **For more information:**

**Human microbiome project:** <http://nihroadmap.nih.gov/hmp/>

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