Report answers questions about the human microbiome and its role in health, obesity

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The human microbiome, the collection of trillions of microbes living in and on the human body, is not random, and scientists believe that it plays a role in many basic life processes. As science continues to explore and better understand the role of the human microbiome. A new report from the American Academy of Microbiology addresses some of the most common questions about this growing area of research.

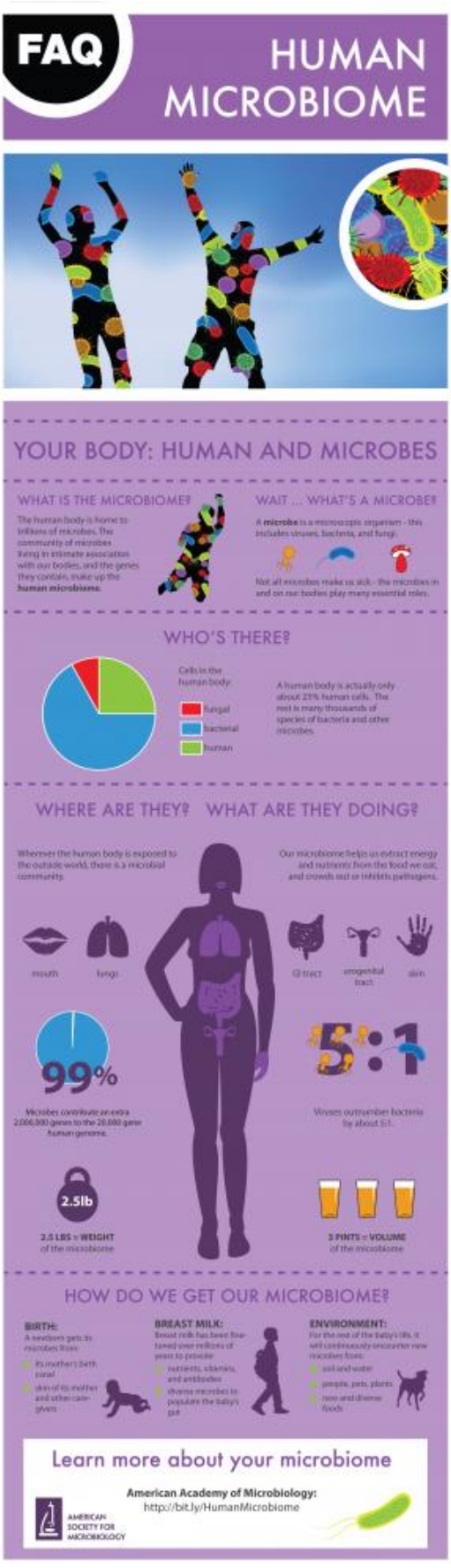
The report, entitled FAQ: Human Microbiome is based on the deliberations of 13 of the nation's leading experts who met to develop clear answers to frequently asked questions regarding the human microbiome and its role in human health.

Some of the questions considered by the report are:

- What is the human microbiome?
- Where does our microbiome come from?
- How big is the microbiome?
- Where is the microbiome located, and what is it doing?
- What is the relationship between the microbiome, health, and disease?

"Scientists are experiencing startling insights into the role that microorganisms play, not only in disease, but more importantly in our health and well-being," says Lita Proctor of the National Human Genome Research Institute, a member of the steering committee of the report. Proctor is also Program Director for the Human Microbiome

Project, an 8-year undertaking by the National Institutes of Health to identify and characterize the microorganisms which are found in association with both healthy and diseased humans.


FAQ
HUMAN MICROBIOME
YOUR BODY: HUMAN AND MICROBES
WHAT IS THE MICROBIOME?
The human body is home to trillions of microbes. The community of microbes living in intimate association with our bodies, and the genes they contain, make up the human microbiome.
WAIT ... WHAT'S A MICROBE?
A microbe is a microscopic organism - this includes viruses, bacteria, and fungi.
Not all microbes make us sick - the microbes in and on our bodies play many essential roles.
WHO'S THERE?
Cells in the human body:
fungal
bacterial
human
A human body is actually only about 23% human cells. The rest is many thousands of species of bacteria and other microbes.
WHERE ARE THEY? WHAT ARE THEY DOING?
Wherever the human body is exposed to the outside world, there is a microbial community.
Our microbiome helps us extract energy and nutrients from the food we eat, and crowds out or inhibits pathogens.
mouth
lungs
GI tract
urogenital tract
skin
99%
Microbes contribute an extra 2,000,000 genes to the 20,000 gene human genome.
5:1
Viruses outnumber bacteria by about 5:1.
2.5lb
2.5 LBS = WEIGHT of the microbiome
3 PINTS = VOLUME of the microbiome
HOW DO WE GET OUR MICROBIOME?
BIRTH:
A newborn gets its microbes from:
its mother's birth canal
skin of its mother and other caregivers
BREAST MILK:
Breast milk has been fine-tuned over millions of years to provide:
nutrients, vitamins, and antibodies
diverse microbes to populate the baby's gut
ENVIRONMENT:
For the rest of the baby's life, it will continuously encounter new microbes from:
soil and water
people, pets, plants
new and diverse foods
Learn more about your microbiome
American Academy of Microbiology:
http://bit.ly/HumanMicrobiome
AMERICAN SOCIETY FOR MICROBIOLOGY

This infographic shows interesting facts about the human microbiome. Credit: American Academy of Microbiology

Researchers have long known that bacteria reside on and within the human body, but traditional microbiology has typically focused on the study of individual species as isolated, culturable units. Recent advances in DNA sequencing technologies and other molecular techniques have allowed for more comprehensive examination of these microbes as communities that have evolved intimate relationships with their hosts over millions of years. Scientists now recognize that the microbiome may be responsible for a broad variety of metabolic and developmental processes from food digestion to vitamin synthesis, and even brain function. The report also includes sections highlighting the role of the microbiome in human conditions such as obesity and inflammatory bowel disease, and offers some general tips on what can be done to maintain a healthy microbiome.

"The American Academy of Microbiology has produced a creative and informative resource on the human microbiome for a wide audience which describes the beauty and complexity of the human microbiome, the insults we may be causing our microbiomes as a result of common practices in our modern societies, why we now need to include the microbiome when considering human health, and the future research directions for this emerging field which combines medicine, ecology and evolution," says Proctor.

FAQ: Human Microbiome is the latest offering in a series of reports designed to provide a rapid response to emerging issues or to highlight the role of microbes in daily life. Previous FAQ reports have covered

topics like the role of microorganisms in cleaning up oil spills and the central role of yeast in the production of beer.

More information: http://academy.asm.org/index.php/faq-series/5122-humanmicrobiome?utm_source=pr&utm_medium=outreach&utm_campaign=FAQMicrobiome

Provided by American Society for Microbiology