What is a Human Microbiome?

> *Context: The microbiome research has gone from a 'niche subject area' to 'one of the hottest topics in all of science'. Researchers have thrown light into the human microbiome — the community of microbes living in the human body.*

Human Microbiome:

- Human Microbiome is the aggregate of all microbiota that reside on or within human tissues and biofluids along with the corresponding anatomical sites in which they reside, including the skin, mammary glands, seminal fluid, uterus, ovarian follicles, lung, saliva, oral mucosa, conjunctiva, biliary tract, and gastrointestinal tract.
- Types of human microbiota include bacteria, archaea, fungi, protists, and viruses.
- In the context of genomics, the term human microbiome is sometimes used to refer to the collective genomes of resident microorganisms; however, the term human metagenome has the same meaning too.

Facts about Human Microbiome:

- Every adult ends up with a unique microbiota configuration, even identical twins that are raised in the same household.
- Mothers do not pass their microbiomes to their children at birth. Some microorganisms are directly transferred during birth but they constitute a small fraction of the human microbiota; and only an even smaller fraction of these microbes survive and persist throughout the child's life.
- Diseases are caused by undesirable interactions between microbial communities and our cells. Whether a microbe and its metabolite are 'good' or 'bad' depends on the context. For example, most humans carry a species of bacteria called Clostridium difficile without any disease for life. It causes problems only in the elderly or in people with compromised immune systems.
- The absolute microbial cells in one gram of human faeces are around 10^10 to 10^12. The human microbiota weighs about half a kg or less.

Probiotics:

- Probiotics are foods or supplements that contain live microorganisms (live beneficial bacteria and/or yeasts) intended to maintain or improve the "good" bacteria (normal microflora) in the body.