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Bacteria and Viruses

- The two most common causative agents of infectious disease are the virus and bacteria. Both of these pathogens are invisible to the naked eye, allowing for their ~~stal-lity~~ stealthy transfer from person to person during an outbreak of a contagious disease. While they rightly share a nasty reputation as disease agents, their properties aparts from the harm they cause are quite dissimilar.

- Difference between Viruses and Bacteria

Living or not : Viruses are not living organisms, bacteria are. Viruses only grow and reproduce cell inside of the host cells they infect. When found outside of these living cells, Viruses are dormant. Their "life" therefore requires the hijacking of the biochemical activities of a living cell. Bacteria, on the other hand, are living organisms that consist of single cell that can generate energy, make its own food, move, and reproduce. This allows bacteria to live in many places - soil, water, plants and the human body and serve many purposes.

- Size : Bacteria are giants when compared to viruses. The smallest bacteria are about 0.4 micron (one millionth of a meter) in diameter while viruses range in size from 0.02 to 0.25 micron. This makes most viruses submicroscopic, unable to be seen in an ordinary light microscope. they are typically studied with an electron microscope.

- Mode of Infection : Their mode of infection is different. Because of their distinct biochemistry, it should come as no surprise that bacteria and viruses differ in how they cause infection. Viruses infect a host cell and then multiply by the thousands, leaving the host cell and infecting other cells of the body. A viral infection will therefore be systemic, spreading throughout the body. Systemic diseases caused by viral infection include influenza, measles, polio, AIDS, and COVID-19. Pathogenic bacteria have a more varied operation and will often infect when the right opportunity arises, so called opportunistic infection. The infection caused by pathogenic bacteria is usually confined to a part of the body, described as a localized infection. These infections may be caused by the bacteria themselves or by toxins (endotoxins) they produce. Example of bacterial disease include pneumonia, tuberculosis, tetanus and food poisoning.

- How Viruses Interact with Bacteria

Viruses can infect bacteria. Bacteria are not immune to Viral hijackers which are known as bacteriophages – Viruses that infect bacteria. We don't want to judge, but this may be one more reason to put viruses one notch higher in the nasty germs hierarchy.

	Virus (Vs)	Bacteria
i)	Viruses are not living organism	Bacteria are living organism.
ii)	Viruses only grow and reproduce inside of the host cells they infect.	Bacteria are living organism that consist of single cell that can generate energy, make its own food, move and reproduce cell.
iii)	Viruses are submicroscopic.	Bacteria are giant compared to Viruses
iv)	A Viral infection is systemic. Virus infect a host cell and then multiply by thousands, leaving the host cell and infecting other cell of body.	Bacteria infection is usually confined to a part of the body, described as a localized infection. Infection may be caused by bacteria or by toxins produced.
v)	Systemic diseases caused by Viral infection include influenza, measles polio, AIDS and COVID-19.	Bacterial disease include pneumonia, tuberculosis, tetanus and food poisoning.

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