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perplexity

Overview of Viruses in the Human Body

The human body hosts a vast array of viruses, collectively known as the *human virome*. This virome includes both viruses that can infect human cells directly and viruses that infect the bacteria (bacteriophages) and other microorganisms living within us[1] [2].

Harmless and Typically Present Viruses

- **Prevalence:** In healthy individuals, an average of 5–15 different viral genera are typically found, with most people carrying several distinct families of viruses at any given time[2].
- **Common Harmless Viruses:**
  - *Anelloviridae* and *Redondoviridae* are small circular DNA viruses commonly found in respiratory and fecal samples[1].
  - *Herpesviridae* (such as human herpesvirus 6 and 7) are present in the mouth of nearly all individuals, often without causing symptoms[2].
  - *Papillomaviruses* and *polyomaviruses* are frequently found on the skin and in the nose, usually without causing disease[2].
  - Many bacteriophages (viruses that infect bacteria) are also abundant throughout the gut, skin, and other microbiome-rich sites and are not harmful to humans directly[1].
- **Healthy Human Virome:** The majority of viruses present in healthy people are considered benign or harmless, either because they do not infect human cells, remain latent, or do not cause disease in individuals with normal immune function[2].

Potentially Harmful Viruses

- **Known Pathogenic Viruses:** Of the 219 known species of viruses that can infect humans, only a subset are typically associated with disease[2].
- **Examples of Harmful Viruses:**
  - *Influenza virus*, *HIV*, *hepatitis viruses* (A, B, C), *SARS-CoV-2* (COVID-19), *Ebola*, and *Marburg virus* are well-known for causing significant illness or death[3] [4] [5] [6].
  - Some viruses, like *herpes simplex virus* or *cytomegalovirus*, can cause disease primarily in immunocompromised individuals or under certain conditions, but often persist asymptomatically in healthy hosts[1] [2].
- **Minority Are Harmful:** Harmful viruses are in the minority compared to the total number of viruses present in the human body[2]. Many viruses are either latent, asymptomatic, or only cause disease under specific circumstances.

Summary Table

Virus Type/Family	Typical Presence in Healthy Humans	Potential for Harm
Anelloviridae, Redondoviridae	Very common, usually harmless	Rarely associated with disease
Herpesviridae (HHV-6, HHV-7)	Nearly universal, often latent	Can reactivate, cause disease
Papillomaviridae, Polyomaviridae	Common on skin/nose, often harmless	Some types can cause warts/cancer
Bacteriophages	Abundant, harmless to humans	No direct harm to humans
Influenza, HIV, Hepatitis, etc.	Less common, can be present	Can cause serious disease

Key Points

- Most viruses in the human body are harmless and part of a healthy virome[2].
- Each person typically carries several types of viruses, with high interpersonal diversity[2].
- Only a minority of viruses are known to be harmful, and the risk of disease often depends on the individual's immune status[2].
- The understanding of the full diversity and roles of the human virome is still evolving, and many viruses remain uncharacterized[1] [2].

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1. https://pmc.ncbi.nlm.nih.gov/articles/PMC8008777/
2. https://en.wikipedia.org/wiki/Human_virome
3. https://www.dw.com/en/top-10-most-dangerous-viruses-in-the-world/a-17846283
4. https://www.healthline.com/health/viral-diseases
5. https://my.clevelandclinic.org/health/body/24861-virus
6. https://www.livescience.com/56598-deadliest-viruses-on-earth.html