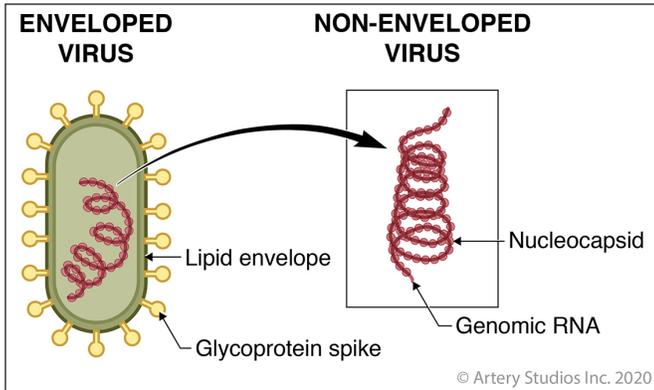


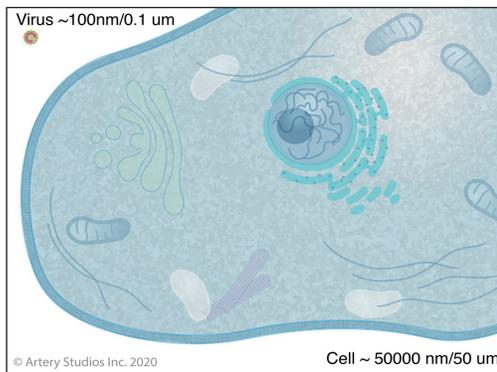
**What is a virus?**

The word “virus” derives from the Latin for “poison” – a fitting name for something that so effectively compromises life. A virus, also known as a virion particle, is essentially a tiny piece of genetic material surrounded by a protein shell called a nucleocapsid and often enveloped inside another shell of molecules.



**Viruses are either ‘naked’ or surrounded by an envelope of fat molecules with embedded glycoproteins.**

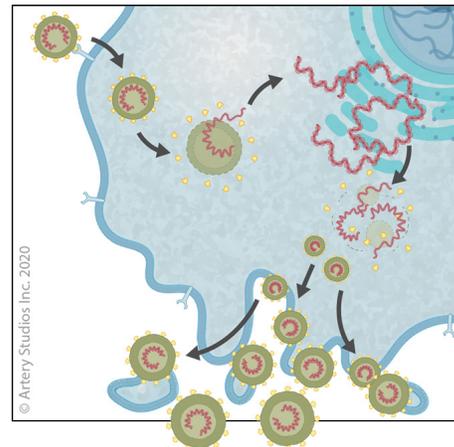
A virion’s life is entirely self-serving – its goal is to replicate, by parasitically entering a host cell and hijacking its internal machinery to create copies of itself. Like an insidious poison, the newly-formed virus particles bud off or explode out, killing the cell, and spreading and infecting adjacent cells.



**Most viruses are so small they can be observed only with an electron microscope.**

**Is a virus ‘alive’?**

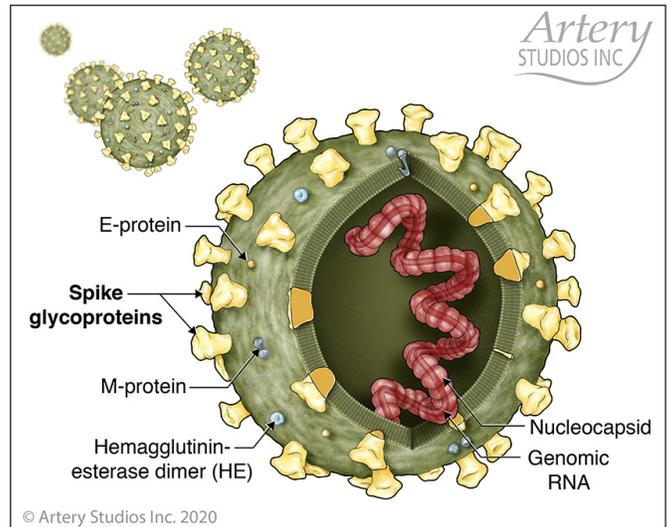
Unlike a cell that is a discrete living entity, able to grow, feed and reproduce – it’s questionable if a virus is alive or not. Its ‘non-living’ status is supported by the fact that it must invade a living cell in order to replicate itself – altering the function and health of that host cell in doing so. A virus’ unalive state was further supported 85 years ago when Wendell M. Stanley and fellow scientists crystalized viruses and discovered they have an entirely biochemical composition. However, an alternate argument favors acceptance that viruses are ‘alive’ due to the cascade of activity they trigger inside an infected host cell.



**A virus becomes ‘alive’ when it enters a host cell and replicates itself.**

**What’s the anatomy of the COVID-19 virus?**

The novel coronavirus that causes COVID-19 disease consists of a piece of genetic ‘instructions’ called RNA (a variant of DNA), and its nucleocapsid with an external shell of fat molecules. This outer layer of fat is penetrated by protein molecules that project outwards in club-shaped extensions. The “corona” (also Latin) in the name, refers to this crown or halo of spikes with jewels that are seen under the microscope.



**The novel coronavirus has ‘jewels’ that project from its surface that allow it to attach onto the cells of the human respiratory system and trigger illness.**

The glycoproteins in the surface have a very specific configuration that allow them to connect to a host cell’s receptor – such as the cells lining the human respiratory system, allowing the virus to invade and destroy that cell as it replicates, thereby triggering the potentially deadly cascade of symptoms we’re now all too aware of.

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