

# All a virus does is reproduce!

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The way a virus gets you down is that it ‘takes over’ a host cell and uses the resources of that cell for its own ends. The host cell is then useless or dead, and sometimes, so is the person affected!

Ordinary cells in the body have means to seek food, do important and useful things and also the means to reproduce. Viruses, on the other hand, have only the genetic code for reproduction, in the form of DNA or RNA, but no means to produce another copy of even just that! And so, the one thing a virus does is to enter another cell and reproduce with the help of the substances that the other cell is made of. Till the host bursts and millions of viruses stream forth, to continue the one-point-program of infecting and reproducing.

## The invasion

A virus latches onto a host when features on the exterior of the virus exactly match features on the exterior of the cell, and the two ‘lock in’, like space ships ‘docking’, but by chance contact. Once attached, the virus pushes in its genetic material, which uses the cell's machinery, nutrients and enzymes to generate virus parts. These are assembled into new, mature viruses which leave the cell, to infect other cells.

Because it needs this ‘exact fit’, a virus can usually only infect a particular, specific cell. Persons who are genetically blessed with the smallest difference in the important part of the exterior of such a cell could then be naturally ‘immune’ to the specific virus that affects that cell.

## Protection from viruses

The body protects itself against viruses by taking a leaf out of the virus’ own book. Just as the virus attacks by getting an exact fit on the target cell, special cells, called b-lymphocytes, produce specific ‘antibody’ cells that exactly fit the intruders. This attachment either incapacitates the virus or makes it into a tasty tidbit for *macrophages*, cells in the body that ‘eat’ things! Thus, when a person is infected with a virus, or is injected with a bit of dead virus, like when we take an ‘immune shot’ against measles, B-cells get busy turning out antibodies. They also generate other cells that can manufacture more of the specific antibodies

And so, after ‘immunisation’ or recovery from the infection, we have an arsenal against the particular infection. If we were infected again, we would make a much better response. We may not even know the infection was there.

## **Do viruses change?**

During their million-fold reproduction, there are often 'errors' in the sparse and economical genetic coding that viruses carry. These viruses with 'mistakes' can no more attach to specific cells and continue replicating. If the error is not in a vital portion the virus may still be effectively the same. But then, the 'error' may also help the virus escape the antibody defense. This is how we get new 'strains' of the flu virus each year!

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