Viruses were claimed to exist and to be the cause of disease through negative evidence. When materials could be forced through a filter so fine that bacteria could not get through, yet still cause disease when injected into an animal (often directly into the brain), it was claimed that a "filterable virus" was present.

Prior to the invention of the Electron Microscope in the 1930s it was not possible to see particles this small. With the electron microscope the new breed of virologists started to look at impure materials and claim that they could spot the viruses. The problem is that just by looking at a particle you cannot tell what it is or what it does without fulfilling Koch's postulates.

Koch's postulates were developed by the great 18th century German bacteriologist Robert Koch. Stated simply:

1. Purify the virus (you can use an electron microscope to verify that your sample is pure – all particles should look very similar).
2. Inject the virus into a vulnerable animal.
3. Verify that the symptoms of the disease arise.
4. Repurify the virus.

It is very important to note that these are logical postulates, not scientific laws. They are, in other words, just simple, straightforward, every day logic. Koch's brilliance was putting them into simple words and forcing those who promoted infectious disease theories (most of which were wrong) into a corner. Fulfill these simple logical postulates, or go home.

The problem for viruses was that, even into the electron microscope era, a top virologist was forced to admit that, "It is obvious that Koch's postulates have not been satisfied in viral diseases" (Rivers TM. Viruses and Koch's Postulates. J Bacteriol. 1937 Jan; 33(1): 1-12). So, instead of satisfying these simple logical postulates, he just proposed two new ones

- A specific virus must be found associated with a disease with a degree of regularity.
- The virus must be shown to occur in the sick individual not as an incidental or accidental finding but as the cause of the disease under investigation.

These are obvious nonsense, but even today this paper is still referenced as seminal, and virologists spend more effort trying to rewrite Koch's postulates than to fulfil them.

It helps to know a little bit about how virologists work, getting past all the high-tech, sophisticated equipment, and into the logic. This is the approximate sequence of events, you will find repeated thousands of times in the virology literature:

1. Get a sample from a diseased person or animal. Blood, semen, urine.
2. Purify it a little bit (e.g. spin the blood to get the serum). This is called the 'isolate', even though nothing has been isolated.
3. Possibly put it through a filter (to remove bacteria and whole cells).
4. Add to a culture of cancerous cells (often the HeLa from a woman with cancer or Vero cells from monkeys).
5. Add a number of stimulating and toxic chemicals, as well as nutrients for the cells.
6. Leave for a while (a week or two).
7. Check for signs of a virus including:
   - Particles of the expected size and shape under an electron microscope.
   - Cell death.
   - Detection of proteins believed to be from the virus under investigation (but without purification, how could one know what the proteins that makeup the physical structure of the virus are?).
   - Detection of DNA or RNA believed to be from the virus (but again, without purification, how could one know what the DNA or RNA inside the virus is?).
   - Indirect detection of Reverse Transcription, the process of converting RNA into DNA, even though it is known this occurs in cells (particularly in the artificial environment of a cell culture) without viruses present.
   - Detection of anything unusual, such as giant cells, known as syncitia, even though these anomalies are never found in a living organism.

On this basis virologists claim 'isolation' of a virus, even though they have not logically proven that a virus is present, let alone a specific virus.

If anyone believes that Koch's postulates have been fulfilled for any virus, I would love to hear from you.

Copyright December, 2014 by David Crowe.