

Viral phenomenon: Ancient microbe invaded human DNA

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Illustration of the DNA double helix. Humans carry in their genome the relics of an animal virus that infected their forerunners at least 40 million years ago, according to research published Wednesday by the British science journal *Nature*.

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The invader is called bornavirus, a brain-infecting pathogen that was first identified in 1970s.

Scientists led by Keizo Tomonaga of Japan's Osaka University compared the DNA of a range of mammals, including humans, apes, elephants, marsupials and rodents, to look for tell-tale signatures of bornavirus

code.

In the [human genome](#), the team found several bornavirus fragments but also in the form of two genes that may be functional, although what they do is unclear.

Until now, the only viruses known to have been handed on in vertebrates were retroviruses, which work by hijacking cellular machinery in order to reproduce.

Retroviruses are effective in infiltrating the germline -- the [DNA of reproductive cells](#), which means their sequence, or part of it, is handed on to ensuing generations.

By some estimates, retroviruses account for as much as eight percent of the human code for life.

Bornavirus has a different stealth tactic, replicating in the nucleus of infected cells.

The disease owes its name to the German town of Borna, where a regiment of cavalry horses was wiped out in 1885 by a mysterious "heated head" disease.

Later research also found the disease among sheep, llamas, ostriches, cats and cattle, although how it spreads is poorly understood.

The impact of bornavirus on the human genetic odyssey is likely to trigger fierce debate.

The big questions are whether it provided a potential cause of genetic mutation or innovation in our species, or whether it provided a source for inherited illness -- or, conversely, protection.

Bornavirus has not been clearly linked to diseases in humans, although some researchers speculate there could be a link with schizophrenia and other mental disorders.

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