

# Research proving link between virus and MS could point the way to treatment and prevention

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A new study from researchers at Queen Mary, University of London shows how a particular virus tricks the immune system into triggering inflammation and nerve cell damage in the brain, which is known to cause MS.

Previous research has suggested a link between the Epstein-Barr virus (EBV) and multiple sclerosis but the research has remained controversial since scientists have so far failed to substantiate the link.

The new study proves the virus is involved in a manner more sophisticated and subtle than previously imagined, and may offer new ways to treat or prevent the disease.

MS is a [neurological condition](#) that affects around 100,000 people in the UK. It can cause [vision problems](#), difficulties with walking and fatigue, and tends to strike mainly young and middle-aged women.

Its causes are not completely understood but both genes and environment are known to play a role.

Some previous research has suggested that EBV triggers MS but subsequent studies have failed to find the connection.

The new research, which is published in the journal *Neurology*, looked at

post mortem brains of [MS patients](#), examining areas where [neurological damage](#) had recently occurred.

Lead researcher, Dr Ute-Christiane Meier explained: "EBV is quite a clever virus; when it's not growing and spreading it can hide away in our [immune cells](#)."

"In this study we used a different technique which allowed us to detect the virus in the brains of some people affected by MS, even when it was hiding away in the cells."

Dr Meier and her team of collaborators found that, although the virus was not actively spreading, it was releasing a chemical message into areas of the brain nearby. This chemical message - made up of small [RNA molecules](#) - was activating the body's immune system, causing inflammation. This damages [nerve cells](#) in the brain and causes [MS symptoms](#).

Dr Meier continued: "We have to be careful and have to study more MS brains but this is potentially very exciting research. Now we understand how EBV gets smuggled into the brain by cells of the immune system and that it is found at the crime scene, right where the attack on our nervous system occurs. Now we know this, we may have a number of new ways of treating or even preventing the disease."

One possibility is the widely-used cancer treatment Rituximab; a drug which is known to kill the cells of the immune system in which the virus hides. It is now being trialed as a treatment for MS.

Another possible approach, using anti-viral treatment, will be tested in clinical trials currently in preparation by Professor Gavin Giovannoni and colleagues, also at Queen Mary.

"If we can pinpoint EBV as a trigger, it's possible that we could alter the course of MS or potentially even prevent the condition by treating the virus," Dr Meier added.

"MS so often strikes young women and its unpredictable nature makes it an incredibly difficult disease to live with. We desperately need better ways to tackle the condition."

Interestingly, the research also hinted that infection with EBV and its action on the immune system could also be playing a role in other brain diseases such as cancer and stroke.

Provided by Queen Mary, University of London

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