

# Viruses cooperate or conquer to cause maximum destruction, study finds

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Scientists have discovered new evidence about the evolution of viruses, in work that will change our understanding about the control of infectious diseases such as winter flu.

Researchers at the University of Exeter's conducted experiments to manipulate a virus to see if it could evolve the ability to switch its behaviour according to how many other viruses infect a host.

Previous research has focussed on trying to force harmful microbes to become less threatening to [human health](#) as they evolve. But the new research, which was carried out in collaboration with the University of Oxford, proves viruses can readily develop the ability to adjust their behaviour to maximise their spread, in response to whether they are infecting as a single entity or in combination with other viruses.

Helen Leggett, a postgraduate researcher at the University of Exeter, was the lead scientist on the work, which is published online on December 13th in the journal [Current Biology](#).

She said: "Scientists are constantly searching for ways to limit the damage viruses can cause, to help reduce the impact of illnesses like winter flu and to respond to the next [pandemic](#). Our work proves that regardless of how we try to manipulate viruses, they will always switch their behaviour to serve their own purposes and kill as many cells as possible. This study involved a relatively simple virus. If it can evolve so quickly, it's reasonable to assume that a lot of other viruses and [parasites](#)

can, too."

The study was funded by the European Research Council, the Leverhulme Trust and the Natural Environment Research Council, while Helen Leggett is supported by the Biotechnology and Biological Sciences Research Council. The work also shed light on why organisms cooperate with each other. The virus would only cooperate with viruses which were related to it. When it infected alone it would clone itself within the cell, and would cooperate with those new viruses. In this context, cooperation meant killing the host relatively slowly so that the virus could replicate more. But when it interacted with other viruses which were not related, it killed the cell faster, allowing it to out-replicate and dominate the other [viruses](#).

Provided by University of Exeter

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