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Are viruses edging humans for world supremacy?

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By Communications Staff
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The fact a Canadian can circumnavigate the globe on commercial flights and be back home to watch the Stanley Cup playoffs within two days is a marvel of science and technology.

But according to new research from The University of Western Ontario, it could also be giving viruses the edge in its battle against humans for world supremacy.

Geoff Wild, an assistant professor in Western's Department of Applied Mathematics, led the research with colleagues from the University of Edinburgh and the results were released today online at nature.com.

"It turns out when hosts for these pathogens, for example people, start moving around a lot, it tends to set the stage for natural selection to create more dangerous, or more virulent, strains," says Wild. "As we create a world where we can get from one side of the globe to the other in 24 hours, we're making a human population that is fairly well-mixed. And we're setting the stage for the action of natural selection to produce more virulent, possibly more deadly, strains of virus."

Wild and his fellow researchers developed a formal mathematical model that incorporated theoretical host parasite population dynamics. The model was then run to determine the underlying evolutionary mechanisms of these populations.

The results suggested that an 'individual' parasite has a vested interest not only in its own success, but also the success of its relatives, not the group as a whole, per se.

"Basically, we replace the notion of self-interest, an idea that underlies much of early evolutionary theory, with the notion of self and family interest," says Wild. "The difference between self and family interest versus group interests is subtle, but important.

"There are several reasons why lowered virulence enhances the success of genetic lineages of parasites. For one thing, it means lower host-to-host disease transmission."

Wild says the findings, supported by a grant from Natural Sciences and Engineering Research Council of Canada (NSERC), are based on a theoretical model, so there is no

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(NBER), are based on a theoretical model, so there is no need to cancel international flights just yet.

“There are plenty of assumptions that may or may not hold in the real world. I’m certainly not sounding an alarm bell but it’s what could happen. It’s more what could happen than watch your back.”

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