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Press Release

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Potential harm of newly discovered viruses predicted by study

The threat to global human health posed by newly emerging viruses such as Ebola, SARS and the Zika virus can be predicted, a study has found.

Scientists have developed a system to estimate how harmful each of the 214 known infectious viruses could be to humans.

Previous studies have identified certain traits associated with the emergence of new viruses but not how these variations affect the severity of the disease they cause – known as virulence.

Researchers from the University of Edinburgh trained a computer algorithm to test whether certain virus characteristics, such as how it is spread, can predict its virulence.

The model suggests that higher virulence is associated with the infection of multiple organs, nervous systems or renal systems. It is also associated with airborne and contact-based transmission.

Viruses that spread easily and quickly between people do not appear to be as virulent.

These risk factors could provide fresh understanding into how viruses evolve and help to identify the biological route through which a specific virus causes disease in the body.

Liam Brierley, MRC Skills Development Fellow, University of Liverpool and who conducted the research as a PhD student at the University of Edinburgh, said:

“We know that emerging human viruses can vary widely in how harmful they are and therefore the risk they pose to public health worldwide.

“When a new virus or disease is discovered or emerges it is currently hard to predict how harmful it will be and what impact it will have on populations worldwide.

“Combining more accurate predictions of virus severity with genetic information could improve the planning and preparedness of public health strategies in the future.

The paper, *Tissue Tropism and Transmission Ecology Predict Virulence of Human RNA Viruses*, was published in the journal PLOS Biology. The paper can be found here:

https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000206

For further information, please contact:
Rhona Crawford, Press & PR Office: 0131- 650-2246 email: rhona.crawford@ed.ac.uk