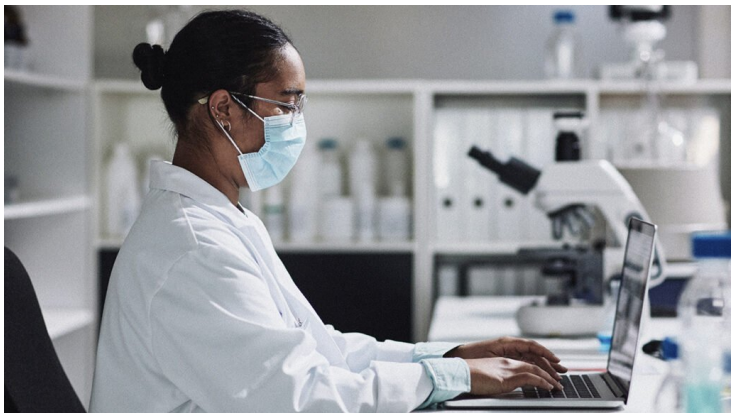
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Japan uses network models to help understand spread of new COVID-19 variants

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Fundamental studies of how diseases spread are a vital piece in informed decision making aimed at bringing normal life back to society



Researchers from Tokyo Metropolitan University in Japan have performed numerical simulations based on network theory which show how numbers of infections in a pandemic change when a new variant emerges.

They found a non-linear dependence between how infectious the new variant is compared to the existing one, an effect not seen in previous work. Their model may be applied to understand real pandemics such as COVID-19 and inform control measures.

The researchers have turned to network theory, a mathematical framework that is able to capture how different members of a population connect to others. Using different types of networks, they were able to create a more realistic model for how an infectious disease might spread.

Key features included dynamic absorbing states, states in which the network can get stuck in over time e.g. a state with no infected people. With a few infections and low infectivity, the network would collapse back to the infection-free state.

The team hopes that their model may be utilized to form effective strategies to contain infectious diseases, looking at points of significant connectivity in the network and understanding how their isolation affects overall infections.