Scientists spot clues to why Omicron infections are milder

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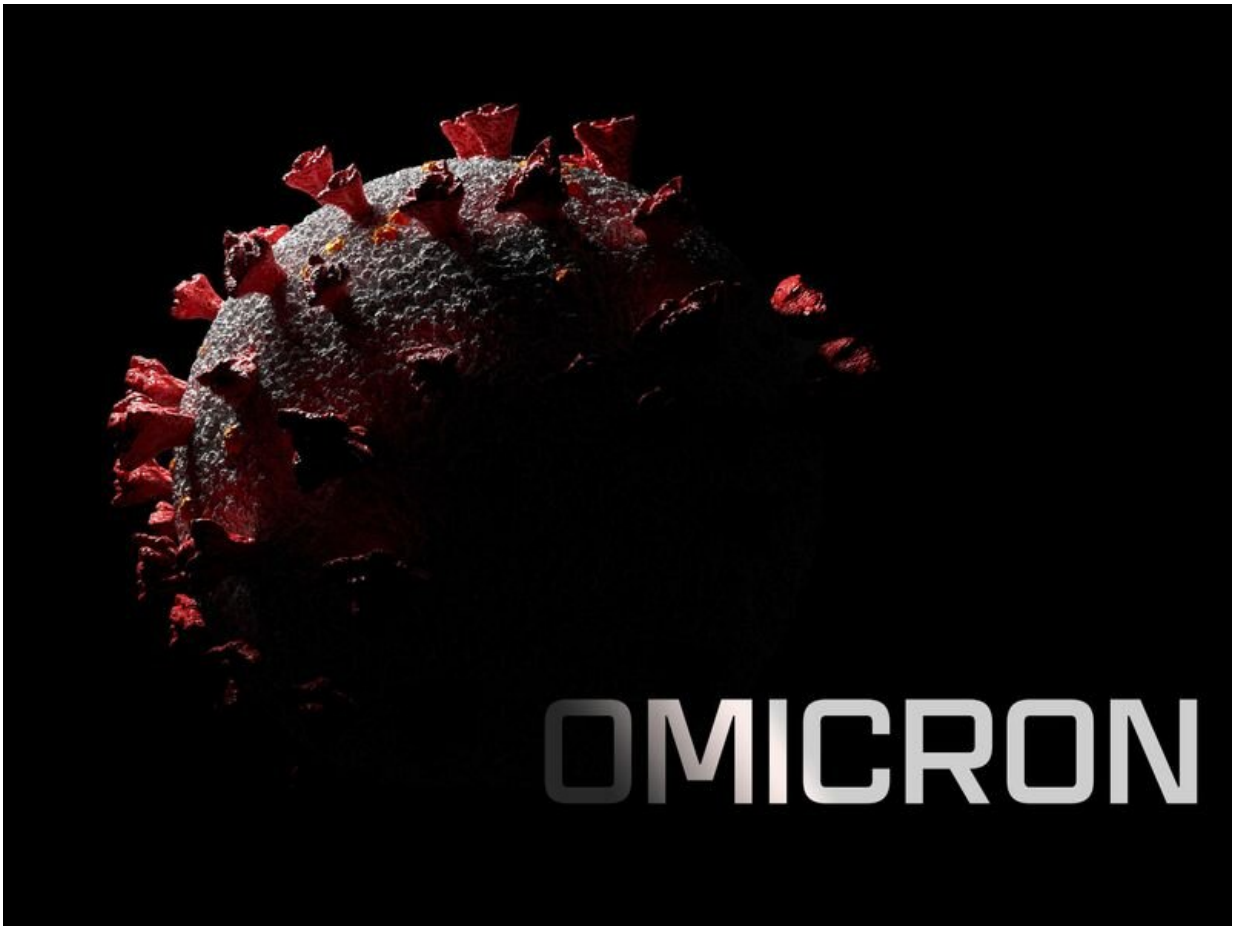

(HealthDay News)—New animal research offers a compelling

explanation as to how the Omicron variant causes less severe disease than some of its predecessors: It seems to settle in the nose, throat and windpipe, rather than traveling down to the lungs.

"It's fair to say that the idea of a disease that manifests itself primarily in the upper respiratory system is emerging," Roland Eils, a computational biologist at the Berlin Institute of Health, who has studied how coronaviruses infect the airway, told *The New York Times*.

More than a dozen research groups have been observing the Omicron variant in lab settings using animals this past month. They have been infecting cells in Petri dishes with Omicron and then infecting the animals.

More than six studies have found Omicron is milder than the Delta variant and others. While previous variants have scarred the lungs and caused breathing difficulties in humans, several studies with mice and hamsters have found that the variant caused much milder symptoms. This included research in Syrian hamsters, which had been found to become severely ill with other variants, the *Times* reported.

"This was surprising, since every other variant has robustly infected these hamsters," Dr. Michael Diamond, a virologist at Washington University and a co-author of that study, told the *Times*.

A large consortium of Japanese and American scientists released a report on their hamster and mice studies last week: Their findings included that the animals infected with Omicron were less likely to die, in addition to losing less weight and having less lung damage.

While Omicron present in the noses of the hamsters was the same as in animals infected with an earlier variant of the coronavirus, Diamond's team found Omicron levels in the lungs were one-tenth or less of the

level of other variants. It should be noted that research conducted in animals isn't always replicated in humans.

Meanwhile, another study has gleaned more information about the virus using bits of tissue taken from human airways during surgery. University of Hong Kong researchers studied the 12 lung samples, finding that Omicron grew more slowly than previous variants.

While this could shed light on why people infected with Omicron seem less likely to be hospitalized than those with Delta, the question will need more research to verify the findings.

Omicron has more than 50 genetic mutations, some of which can enable a coronavirus to grab more tightly onto cells, past research has shown, and others of which can let it evade antibodies.

Once coronavirus reaches the lungs, immune cells can overreact, killing off not just infected cells but uninfected ones. They can also produce runaway inflammation, scar the lung's delicate walls and move into the bloodstream, triggering clots and damaging other organs.

Dr. Ravindra Gupta, a virologist at the University of Cambridge, suggests a molecular explanation for why Omicron doesn't appear to thrive in the lungs.

A protein called TMPRSS2, carried by many cells in the lungs, doesn't grab onto Omicron well. That means Omicron does not effectively infect those cells as vigorously as Delta, something that both Gupta's lab and a team from the University of Glasgow have independently discovered, the *Times* reported. Cells higher in the airway tend to not carry that protein and coronaviruses can also slip into cells that don't make the protein.

"It's all about what happens in the upper airway for it to transmit, right?"

Gupta told the *Times*. "It's not really what happens down below in the lungs, where the severe disease stuff happens. So you can understand why the virus has evolved in this way."

But Diamond stressed it's still premature to say that TMPRSS2 is the key to understanding Omicron. And the studies don't yet answer why the variant is so good at spreading from one person to another.

"It could be as simple as this is a lot more virus in people's saliva and nasal passages," Sara Cherry, a virologist at the Perelman School of Medicine at the University of Pennsylvania, told the *Times*.

The variant also could be more stable in the air or better infect new hosts.

"I think it's really an important question," Cherry added.

More information: The U.S. Centers for Disease Control and Prevention has more on COVID-19.