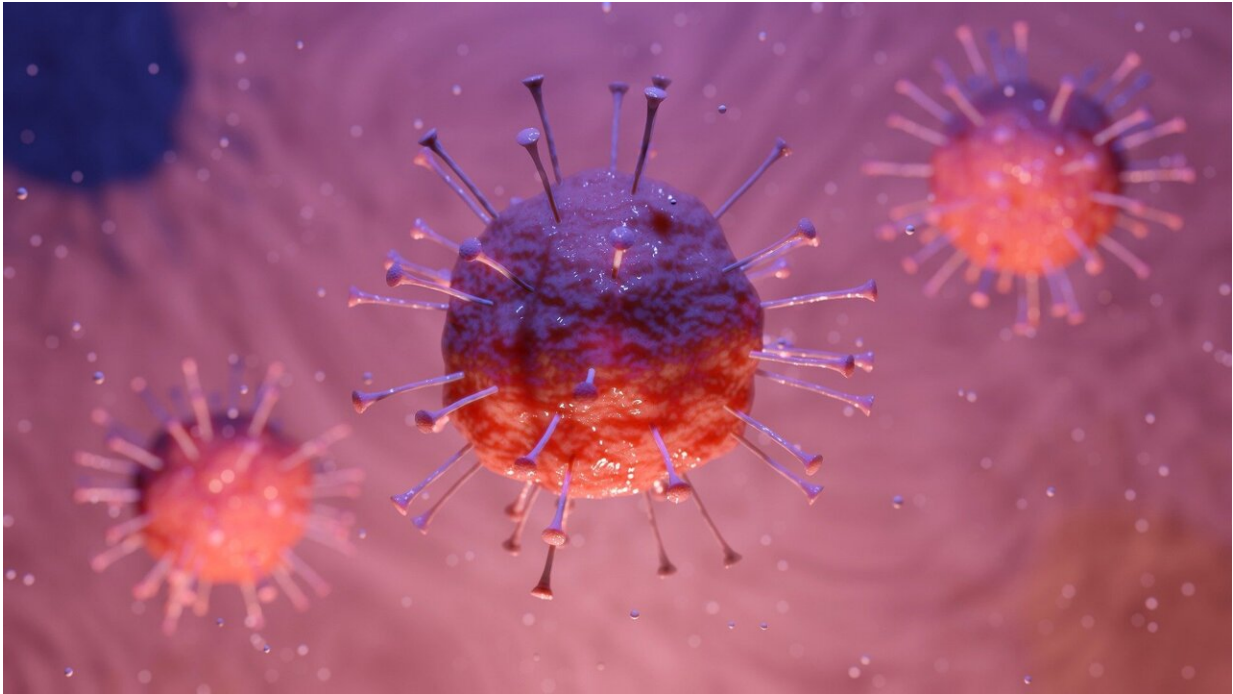


# Are animals vulnerable to COVID-19?

March 30 2020, by Alayna Demartini

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While there's no evidence so far that pets, livestock, or their owners can infect each other with COVID-19, there is also very little research about a potential crossover.

The novel coronavirus started with an animal, then mutated to transfer to people, but research hasn't yet shown if the [virus](#) has jumped back to [animals](#), said Scott Kenney, a researcher at The Ohio State University

College of Food, Agricultural, and Environmental Sciences (CFAES).

"Viruses are constantly sampling and evolving, trying to find other hosts," said Kenney, who studies coronaviruses, including those that cross over from one species to another.

Quickly spreading among people across the world, COVID-19 is believed to have originated in bats, but the bat virus changed, altering surface proteins to be able to efficiently transfer from person to person. These [surface proteins](#) are different in the mutated bat virus, so COVID-19 is now less likely to affect the original bats. Whether other animals are susceptible to COVID-19 has yet to be tested, he said.

When viruses infect an animal, they produce billions of copies of themselves. Some of the copies tend to be slightly changed from the original virus. According to Kenney, while most of these irregular copies die, occasionally one has a change that is beneficial for the virus, such as altering its ability to infect a different species.

"If the new species is exposed to this altered virus, it can now make many more copies of itself and potentially infect a whole new species," he said.

So far, the only research on COVID-19 and animals involves studies in China that showed two dogs tested positive for COVID-19. But neither of the infected dogs had symptoms of the virus, and researchers in those studies do not believe they transmitted the disease to any other animals or people.

Coronaviruses are a large family of viruses, with COVID-19 being the newest addition. Some coronaviruses cause illness in people, some cause illness in certain animals, and others sicken both people and animals. Severe acute respiratory syndrome (SARS) and Middle East respiratory

syndrome (MERS) were both coronaviruses that started in animals and shifted to people, leading to outbreaks. Neither was as adept at transmitting to people as COVID-19.

"COVID-19 has managed to hit a virus evolution sweet spot," Kenney said. "Infected people can be either very sick or show few signs, leading to very rapid spread of the infection."

Coronaviruses are common among [farm animals](#). If COVID-19 were to jump species again and be receptive to animals, a likely animal on the farm to catch it would be pigs, he said. That's because pigs have a similar protein to humans that the SARS virus, a coronavirus cousin to COVID-19, uses to infect humans. Studies show that it may work in pigs too.

Among farm animals, pigs seem to be the most susceptible to coronaviruses, able to contract up to six different pig-specific coronaviruses.

"I'm not sure anyone really knows why," he said. "Outside of bats, pigs and humans seem to be infected by the largest numbers of different coronaviruses."

More studies are needed to understand whether this is because of something in pigs' physiology or [genetic makeup](#), or just that humans and pigs encounter coronaviruses more frequently than other animals. That results in more virus spillovers.

One of the more devastating coronaviruses among livestock in recent years affected only pigs: the porcine epidemic diarrhea virus. During a 2013 outbreak, the virus killed significant numbers of pigs in the United States and China, all of them young pigs.

"The virus continues to pop up and cause problems in many countries around the world," Kenney said.

Even if farmers have spent a lot of time around [pigs](#) or other livestock, including animals with coronaviruses, they do not have immunity to COVID-19, he said. That's why it is still important to be cautious.

"Any time you're around an animal, you should use good hygiene. There are many illnesses besides coronaviruses in animals that can be passed to humans, and vice versa.

Provided by The Ohio State University

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