

## FAQ

# SARS-CoV-2 / Covid-19: What role do pets and farm animals play?



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### Can common farm animals become infected with SARS-CoV-2 and spread it further?

So far, there is no evidence that farm animals/food-producing animals common in Germany play a relevant role in the spread of SARS-CoV-2 or could be relevant as a source of infection for humans. Therefore, testing slaughter animals for SARS-CoV-2 is not useful at this time. The Friedrich-Loeffler-Institut has carried out studies on the susceptibility of animals to SARS-CoV-2. These animal studies are important to assess the potential risk to humans and animals and to test whether these animals might develop into a virus reservoir. The studies show that neither pigs nor chickens, ducks and turkeys can be infected with SARS-CoV-2. These results show that cattle have a low susceptibility to SARS-CoV-2 and do not transmit the virus.

### Can pet animals such as cats and dogs transmit SARS-CoV-2 to humans?

So far, dogs, cats, rabbits, hamsters and ferrets have been shown to be susceptible to SARS-CoV-2. Guinea pigs could not be infected with the virus. However, there is no evidence that pets such as dogs or cats play a role in the spread of SARS-CoV-2 (also see assessment of the European Centre for Disease Control [www.ecdc.europa.eu](http://www.ecdc.europa.eu) and the WHO [www.who.int](http://www.who.int)). For the Covid-19 pandemic, human-to-human transmission is crucial for its spread.

According to the information currently available, the Friedrich-Loeffler-Institut does not believe that contact between healthy humans and pets should be restricted. However, as a general precaution, it is always advisable to observe basic principles of hygiene when coming into contact with animals (e.g. washing hands thoroughly with soap).

### Can pets be infected by infected humans?

Depending on the animal species, this cannot be completely ruled out. However, a possible infection of pets does not automatically mean that the virus can replicate in the animals and will be excreted by them (e.g. with nasal discharge, sputum or faeces). Persons infected with SARS-CoV-2, in particular those with symptoms of the disease, can excrete large quantities of the virus via the nose and mouth (droplet infection). It can be assumed that their surroundings are correspondingly contaminated with virus, even if basic hygiene rules are observed (sneeze and cough in the crook of your arm, wash your hands, clean surfaces). For this reason, infected persons should pay particular attention to hygiene, especially when in contact with their pets, avoid close contact as far as possible, do not cough or sneeze on the animals and do not allow the animals to lick your face.

### Can dogs be infected by infected humans?

So far, there is no scientifically verifiable evidence of an epidemiologically relevant infection of dogs by infected humans. However, there is a dynamic situation which is closely monitored by the Friedrich-Loeffler-Institut.

The virus or its genetic material has been detected sporadically in dogs worldwide. None of the dogs died from Covid-19. A first animal experimental study from China and the two individual cases from Hongkong indicate a low susceptibility of dogs to SARS-CoV-2.

### Can cats and musteloids such as e.g. ferrets be infected by infected humans?

Yes, there are various proofs of this. Positive cats, which partly showed symptoms of disease, were reported from different countries. The cats stayed in

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households with persons suffering from Covid-19 and were probably infected by these persons.

The Bronx Zoo in New York also reported the detection of SARS-CoV-2 in all 8 big cats (tigers and lions). Only one female tiger showed clear disease symptoms (dry cough), all 8 big cats recovered from the infection. Probably the animals were infected by their keepers. Since tigers and lions belong to the Pantherinae (big cats), this and further reports of infected big cats in zoos is not very surprising.

A study from China shows that cats and ferrets can be experimentally infected with SARS-CoV-2 and can also transmit the virus to their conspecifics under special experimental conditions. The study from China has been published here:

<https://doi.org/10.1101/2020.03.30.015347>.

In another study, a total of about 140 cats from the city of Wuhan, which has been particularly affected by Covid-19, were tested for antibodies against SARS-CoV-2. Of these, 102 were sampled after the Covid-19 outbreak, 11 had produced antibodies, which suggests that they had been infected.

In an Italian study, dogs and cats in Northern Italy were examined. The researchers found that between three and four percent of the pets had antibodies against SARS-CoV-2 in their blood. The study has been published here: <https://doi.org/10.1101/2020.07.21.214346>.

The Friedrich-Loeffler-Institut also proved in a study that ferrets can be infected and transmit SARS-CoV-2 to their conspecifics under experimental conditions. However, the studies and reported cases do not allow any conclusions to be drawn as to whether pet animals excrete virus quantities sufficient for human infection.

It needs to be further investigated whether such infections can actually occur. So far, there is no evidence that pets have infected humans. Keeping cats has not been identified as a risk factor.

The SARS-CoV epidemic in 2003 also caused infections of cats without any relevance for a further spread of the disease.

Therefore, this evidence does not change the assessment of the Friedrich-Loeffler-Institut: According to the current state of knowledge, pets do not play an epidemiological role in the spread of SARS-CoV-2 / Covid-19.

Natural infections have been reported in mink from mink farms in several countries, including the Netherlands, Denmark, Spain, Greece and Canada. The animals were probably infected via the care personnel. Minks are related to ferrets, so these cases are not surprising either. In the Netherlands and Denmark, there are indications that employees became infected through contact with infected minks. Given the large number of susceptible animals and the correspondingly high viral load, this cannot be ruled out.

### How should pets of individuals infected with SARS-CoV-2 be handled?

Pets such as dogs and cats can and should remain in the household. However, general hygiene rules such as washing hands before and after contact with the animals and avoiding close contact with the animals should be strictly observed. To protect pets from infections by infected persons, the Friedrich-Loeffler-Institut also recommends that infected pet owners wear a mouth and nose protector. An 'obligation to wear a mask' for animals is not relevant for reasons of protection against infection, as the infections originate from infected people. For this reason and for reasons of animal welfare, it should be rejected.

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Persons who are in quarantine or self-isolation should, if possible, find appropriate individuals outside their own household for assistance in animal care or walking the dog (see below). These could be neighbours or friends who may also provide food for the person(s) in quarantine or self-isolation or (in urban areas) professional dog sitters. Only young, healthy individuals should walk the dog, depending on the dog's character also persons with experience in handling dogs. In every individual case, pragmatic solutions should be found to affect the well-being of the animal as little as possible and to ensure quarantine/self-isolation as much as possible. A separate leash should be used, preferably not that of the dog owner. Always remember: always wash your hands after walking the dog! **The infection risk does not come from the dog, but from the possibly infected owner(s)!** Before handing over the dog, infected owners should wash their hands thoroughly.

Cats of owners in self-isolation who normally leave the house („outdoor cats“) should be kept indoors for the duration of quarantine, if possible. Cats should also not be kept together with other foreign cats (e.g. in a boarding cattery).

**There is no reason to leave pets in shelters as a precaution. If a pet tests positive for SARS-CoV-2, there is no reason to euthanize the animal.**

### What is the reason for compulsory notification of SARS-CoV-2 infections in animals?

Compulsory notification helps to better understand the possible role of animals\* in the corona pandemic and their relevance as vectors and to gain more information on infection scenarios. It bundles the reported cases and provides a Germany-wide overview. Getting a project such as compulsory notification underway is a process that is preceded by expert discussion and coordination.

\* animals in captivity pursuant to §2 Animal Health Act (TierGesG) with the exception of trout, carp, bumblebees and bees

### What does compulsory notification mean in concrete terms and who does it affect?

Compulsory notification is the obligation to report the detection of infection in an animal. However, there is no obligation to examine the animal. In the event of a positive result, the laboratory or veterinarian must inform the district veterinary office. The district veterinary office reports the case to the Animal Disease Notification System (Tierseuchennachrichtensystem, TSN). This is therefore purely an obligation to provide information. Compulsory notification does not itself entail any control measures. However, the district veterinary office may impose measures such as quarantine.

Compulsory notification means that the heads of the district veterinary offices, the animal health offices or other public or private diagnostic institutions are obliged to provide information. Also veterinarians who detect the disease in the course of their work must report animals tested positive, unless sample material from the affected animal has been investigated by one of the above-mentioned bodies. The costs of the investigation are usually borne by the animal owner. If there is a particular scientific interest in the test result and if there is reasonable suspicion of an infection, cost recovery by the district veterinary office can be discussed.

### When does it make sense to test your pet for SARS-CoV-2?

If a pet owner infected with SARS-CoV-2 requests laboratory testing of his own susceptible pets, testing and sampling should be notified to the competent veterinary office and should be carried out on site by

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an authorized and appropriately protected individual. Detection in animals follows the same test procedure as in humans. If other animal owners wish to have an animal tested for SARS-CoV-2, this should only be done after consultation with the veterinarian. If the animal is to be tested, swab samples from the pharyngeal or nasal mucosa or, if other samples cannot be collected, fecal samples may be used and tested by RT-PCR. However, the Friedrich-Loeffler-Institut does not support testing of animals without an epidemiological relationship with SARS-CoV-2 infection/COVID-19.

### How should positively tested pets be handled?

If an animal tested positive does not already live in a household with persons in self-isolation or quarantine or if the animal owner has had to be hospitalized, the animal should be kept in isolation for 14 days (similar to the procedure for humans), if possible. Persons with close contact to the animal are Category II contact persons. More information on contact person management can be found on the website of the Robert Koch Institute: [https://www.rki.de/DE/Content/InfAZ/N/Neuartiges\\_Coronavirus/Kontaktperson/Management.html](https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Kontaktperson/Management.html)

### Are there other coronaviruses in pet and farm animals?

Yes, there are coronaviruses in various animal species. For example, feline infectious peritonitis (FIP) occurs in cats. In pigs, porcine epidemic diarrhea (PED) is caused by a coronavirus. These pathogens pose no risk to humans and can be clearly distinguished from SARS-CoV-2.

### Where does SARS-CoV-2 come from?

Molecular biological studies of the genetic material of SARS-CoV-2 (sequence analyses) indicate that closely

related viruses are found in certain bats. SARS-CoV-2 belongs to the so-called betacoronavirus group. The closest related coronaviruses are SARS-CoV (occurred first in 2003, also with bats as the known reservoir host), MERS-CoV (*Middle East Respiratory Syndrome Coronavirus*, first detected in 2012 on the Arabian Peninsula; dromedaries are the natural hosts) and other coronaviruses of bats.

SARS-CoV, SARS-CoV-2 and MERS-CoV are infectious agents that can be transmitted between animals and humans; therefore, the infections they cause are zoonoses.

It is unclear whether SARS-CoV-2 was transmitted directly from bats to humans or whether an animal intermediate host played a role in the early transmission to humans. A first experimental study at the Friedrich-Loeffler-Institut shows that raccoon dogs are susceptible to SARS-CoV-2, but remain almost clinically inconspicuous. Thus, they come into question as intermediate hosts.

An overview is provided in the publication „The proximal origin of SARS-CoV-2“ by Kristian G. Andersen et al. in *Nature Medicine* (<https://doi.org/10.1038/s41591-020-0820-9>).

### What role do endemic bat species play?

In principle, coronaviruses belong to the natural pathogen spectrum of endemic bats. However, these coronaviruses are clearly distinguishable from SARS-CoV-2. Although it is assumed that the current corona pandemic has its origin in Asian bats, there has been no direct detection so far. Instead, other intermediate hosts must be considered.

According to current knowledge, endemic bats do not play a role in the current corona pandemic. Therefore, there is no reason to persecute these strictly protected species, to scare them off houses or to destroy

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their living quarters. Direct contact between bats and humans is per se extremely rare. However, it cannot be ruled out that the pathogen is introduced into endemic bat species by infected humans.

More information on this topic can be found in the information sheet „Einheimische Fledermäuse und SARS-CoV-2“ (in German language) jointly produced by the Bundesverband für Fledermauskunde, NABU, Fledermauszentrum Noctalis, the University of Greifswald, the Leibniz-IZW, Museum für Naturkunde Berlin, BAT. e.V. and the Deutsche Fledermauswarte e.V., see <https://www.deutsche-fledermauswarte.org/fledermausschutz-in-der-corona-krise/>.