

THE FOLLOWING DESCRIBES A DIAGNOSTIC LABORATORY TEST FOR USE IN PET DOGS AND CATS. THIS TEST IS ONLY AVAILABLE UPON REQUEST TO SUPPORT PUBLIC AND ANIMAL HEALTH AGENCIES AS WELL AS ACADEMIC RESEARCHERS. THIS TEST WAS DEVELOPED AND VALIDATED WITH PUBLICLY AVAILABLE DATA AND INTERNATIONAL STANDARDS AT THE REQUEST OF THESE AGENCIES IN THE WAKE OF THE CURRENT PUBLIC HEALTH PANDEMIC CONCERNING COVID-19. **THIS TEST IS NOT AVAILABLE CURRENTLY TO VETERINARIANS OR THE GENERAL PUBLIC. PLEASE DO NOT CALL TO REQUEST TESTING.**

AS OF MARCH 27, 2020, THERE IS NOW EVIDENCE FOR PETS BEING INFECTED WITH THE COVID-19 VIRUS. STILL, ACCORDING TO THE WORLD HEALTH ORGANIZATION (WHO) AND WORLD ORGANISATION FOR ANIMAL HEALTH (OIE), THERE IS NO EVIDENCE THAT COMPANION ANIMALS OR PETS SUCH AS CATS AND DOGS CAN SPREAD THE VIRUS THAT CAUSES COVID-19 TO EITHER OTHER ANIMALS OR HUMANS.

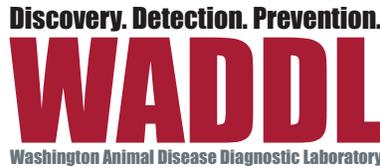
ALL READERS OF THIS PIECE ARE ENCOURAGED TO CHECK THE POSTING DATE AND SCROLL DOWN TO THE BOTTOM TO SEE ANY TIMELY UPDATES.

## INTRODUCTION

The Washington Animal Disease Diagnostic Laboratory (WADDL), at the request of federal, state, and county animal and public health agencies, has developed and validated a laboratory test for the coronavirus known as SARS-CoV-2 (COVID-19 virus).

This virus causes the disease in humans known as COVID-19 which is currently a pandemic and responsible for a national public health emergency. WADDL has agreed to assist in the response to this disease by testing certain animals upon request of public health and animal health agencies responding to the emergency.

The test identifies COVID-19 virus without cross-reacting with common, naturally occurring respiratory viruses in dogs and cats. Coronaviruses, named for the crown-like spikes found on their surface, carry their genetic material in single strands of RNA (rather than DNA). The WADDL test uses a technique called a real time polymerase chain reaction test (real time PCR) to detect the presence of a unique fingerprint of COVID-19 virus RNA. The process transforms very small quantities of the RNA into very large amounts of DNA which can then be easily



detected using specialized equipment. WADDL also performs targeted genetic sequencing to verify the real time PCR results and further increase the accuracy of the overall testing plan.

The coronaviruses infect a wide variety of human and animal hosts causing respiratory, enteric and systemic disease. In humans, coronaviruses are usually spread by airborne droplets of fluid produced by infected individuals.

## **JUSTIFICATION**

A 17 year-old Pomeranian dog in Hong Kong that was isolated in the apartment of an individual that tested positive for SARS-CoV-2 and that suffered with COVID-19 was tested numerous times for presence of the virus. It is not well understood what that means clinically since the dog had not displayed any signs or symptoms of illness. At this time there remains no wide-ranging evidence that pets such as dogs and cats can transmit COVID-19 virus to humans.

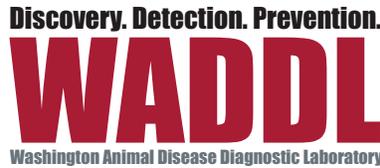
That dog has subsequently died of causes unrelated to the COVID-19 virus. The owner would not allow a necropsy. Additional tests done on the dog's blood (serology) that was previously collected, tested positive. This proves the virus infected the dog and its immune system reacted producing antibodies that were found by a WHO reference laboratory.

Further testing attempted to isolate the virus itself and those tests were negative meaning there was no live virus in the dog's blood.

Currently, infection of dogs with the COVID-19 virus is infrequent. Hong Kong authorities have tested an additional 17 dogs and 8 cats from households with confirmed COVID-19 infections in humans. Only two of those dogs tested positive and neither has shown clinical signs of disease. As a result, Hong Kong public health authorities are now isolating all mammals, including dogs and cats from households with confirmed COVID-19 cases in humans.

The question of infection in animals is important because in a study done in 2003 with the previous SARS outbreak, domestic cats and ferrets could be infected with the SARS (severe acute respiratory syndrome) coronavirus and could pass it to other cats and ferrets. Disease experts would like to know if this is a possibility for the current virus causing COVID-19, which has added to the reasoning for testing pets for agencies by WADDL.

At this time, there is a potential positive case in a cat from a household with a human diagnosed with COVID-19 in Belgium but the results are not confirmed.



## **TESTING METHODS AND LIMITATIONS**

Testing first involves securely collecting swabs from around the external openings of the nose and from the back of the mouth near the throat. Public health veterinary personnel collecting such samples wear full personal protective equipment (PPE) during specimen collection. They are also trained to handle cats or dogs in a clinical sampling situation.

Once securely collected, samples will be securely packaged according to federal regulations for biological materials shipment and transported to WADDL in Pullman, Washington. There, specially trained personnel will process and test samples in WADDL's Biosafety Level 3 laboratory to optimize biosecurity of sample testing. Testing currently is set for twice weekly however WADDL has the capacity to scale up if necessary, potentially even turning emergency sample results within two hours.

The testing plan, real time PCR and targeted genetic sequencing, will accurately identify COVID-19 virus genetic material, but does not determine whether or not the virus is alive.

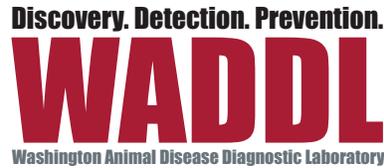
WADDL is a Level 1 laboratory in the USDA National Animal Health Laboratory Network (NAHLN) and any animals identified positive for SARS-CoV-2 by WADDL will be confirmed by the USDA-NAHLN national reference laboratory. Positive results for SARS-CoV-2 in animals will be reported to the submitting party and the State Veterinarian where submitting party resides since any COVID-19 virus identified in animals is reportable to the World Organization for Animal Health (OIE). In this way, information regarding any COVID-19 virus identified in animals can be shared around the world for combatting the global COVID-19 pandemic.

A second and perhaps more important goal for the current WADDL testing is to begin collecting valuable scientific data for further study especially if animals are determined to be carriers for SARS-CoV-2.

## **CURRENT RESULTS FROM WADDL TESTING**

As of March 27, 2020, WADDL has tested two cats for the SARS-CoV-2 virus. Both results were negative for the COVID-19 virus by RT-PCR.

The first was a cat necropsied and tested at the request of another state's agency that lived with a human diagnosed with COVID-19. This cat's death was unrelated to the COVID-19 virus. Necropsy revealed the animal had a common feline heart disease that causes abnormal



thickening of the organ's walls (hypertrophic cardiomyopathy). When this condition occurs, the heart labors to pump blood easily and eventually fails. WADDL tested 23 tissues and the cat's feces. All tests were negative for SARS-CoV-2 by RT-PCR.

The second case tested at the request of a state agency is a cat that is living with no signs or symptoms of disease. The cat was quarantined with its owner who was diagnosed with COVID-19. Nasal and throat swabs from this cat were test negative for SARS-CoV-2 by RT-PCR; similar results were obtained from USDA-NVSL with further tests pending.

### **ADDITIONAL INFORMATION**

WADDL is a fee for service laboratory and all client records are confidential. Unless ordered otherwise, WADDL will not provide information about any client sample testing. Requests for such information are best directed in this case to the agencies for which the testing is being conducted.

WADDL and the Washington State University College of Veterinary Medicine will keep this site current for as long as is practical. In the meantime, state and federal agencies are welcome to contact the laboratory at any time for information or sample submission.