

Are COVID-sniffing dogs the new tool in helping detect the virus?

February 5 2021, by Lauren Barker



Sean Mealin and Simba, using a traditional guide dog harness and handle. Credit: NC State University

Pandemic protocols and procedures are rapidly evolving as we learn more about getting the spread of COVID-19 under control. One new tool to help us track those infected with COVID-19 may be COVID-sniffing dogs. Dr. David Dorman, professor of toxicology in the Department of Molecular Biosciences at NC State's College of Veterinary Medicine, sat

down with The Abstract to talk about how dogs are able to detect the virus and where this may be useful.

TA: How exactly are dogs able to sniff out COVID-19 and other diseases and viruses like SARS-CoV-2?

Dorman: There are two parts to answering this question. First, [dogs](#) have very sensitive noses and can detect many odors in the air at concentrations well over 1,000 times lower than we can. The second part relates to what exactly the dog may be responding to. We don't know exactly what they are responding to. It's likely that they are not responding to the virus itself but may instead be detecting subtle odors that occur in people infected with the virus. For example, some [respiratory diseases](#) cause subtle chemical changes in the air we exhale. The scent associated with these chemicals can then be detected by a trained dog.

TA: Is there an actual scent associated with COVID that the dogs can smell?

Dorman: Rather than asking whether there is a scent associated with the virus itself, what many scientists ask instead is whether there is a scent associated with COVID-19 infection. There have been several recent scientific studies exploring this question. These studies trained dogs to discriminate sweat or [saliva samples](#) taken from people with known COVID-19 infection from similar samples taken from uninfected people. Over time the dogs were able to learn the scent that was associated with COVID-19 infection. In both studies the dogs had success rates higher than 75%.

TA: What is the training process for this and is it

similar to cancer-sniffing dogs?

Dorman: Scent [training](#) relies on several things—the odor, the trainer, the dog, and lots of patience. We need a sample of the odor that we want to use to train the dog. We will refer to this as a training aid. The trainer presents this training aid to the dog—and over many trials the dog will begin to be able to recognize or find the odor used in training. The training will usually become more complicated over time. For example, we may add distracting odors to see if the dog will become confused. In the case of training a dog to detect COVID-19 we may add samples from people with other respiratory diseases like the seasonal flu. The dog is obviously key to this process working. Training often involves some reward, like a food treat or play, so the dog needs to be motivated enough to learn the game to keep trying. Like most things involved with dog training we also need patience since different dogs learn at different rates. And not all dogs that are used become trained.

TA: Who is in charge of training these dogs and how long does training like this typically take?

Dorman: So far most efforts have involved groups that have a history of training scent detection dogs for other purposes. These have involved groups in universities and private companies. The published scientific studies used dogs with previous training as scent detection dogs. The authors of these studies reported that it took several weeks to retrain the dogs to detect COVID positive samples. It could take much longer to train a dog with no prior [scent](#) detection training.

TA: Do you think this asset will help in crowded areas such as sporting events, malls, airports, etc.?

Dorman: This approach has been used on a voluntary basis at the airport

in Helsinki, Finland for the past few months. I anticipate that other venues including sports arenas will try this approach. There have also been attempts to use dogs to detect COVID-19 on counter tops, floors and other surfaces. This may allow schools and hospitals to identify contaminated surfaces and disinfect them.

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