

# Experiments show dogs can 'smell' radiated heat

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A combined team of researchers from Lund University in Sweden and Eötvös Loránd University in Hungary has found evidence that dogs are able to "smell" radiated heat. In their paper published in the journal *Scientific Reports*, the group describes experiments they conducted with dogs and what they learned from them.

Most mammals have smooth, [dry skin](#) on the rims of their nostrils (an

area called the rhinarium) to facilitate air intake—but the skin of the rhinarium of [dogs](#) is moist and cooler than [ambient air](#)—it also has more nerves than those of most other mammals. In this new effort, the researchers have found evidence that suggests the reason the noses of dogs and wolves are different from other mammals is because they have the ability to "smell" [radiant heat](#).

To learn more about the capabilities of the dog nose, the researchers trained several pet dogs to retrieve objects based on heat. Identical objects were then warmed to a few degrees above [ambient temperature](#) and the dogs were asked to fetch the one that was warmer from a distance of approximately 1.6 meters—too far to feel the warmth of the object. That the dogs were able to do so suggests very strongly that they were able to sense the radiated heat.

Heat transfer comes in three varieties: conductive, convective and radiated. Heat conduction occurs when objects come in contact with one another. Convective heat is carried by a medium such as a gas or liquid. And radiated heat, in sharp contrast, moves via photons—it is the energy of photons that humans can feel on their skin on a sunny day.

The researchers also put several of the pet dogs in an fMRI scanner and exposed them to identical objects, some of which were at ambient temperature and others which were slightly heated. The scans showed the somatosensory cortexes of the dogs lit up when they were presented with the warmed objects, but not those at room temperature.

The researchers note that more work is required to prove that the ability to sense radiated heat depends on sensors in the rhinarium, and also to find out how the sensing process works.

**More information:** Anna Bálint et al. Dogs can sense weak thermal radiation, *Scientific Reports* (2020). [DOI: 10.1038/s41598-020-60439-y](https://doi.org/10.1038/s41598-020-60439-y)

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