

Method allows researchers to collect body odour samples of mammals in a non-invasive manner

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Among other possibilities, mammals, like meerkats, use olfactory cues to communicate with conspecifics. Credit: Brigitte Schlögl (geb. Weiß)

Mammals communicate with each other using olfactory cues. This way they recognize relatives or friends or find a genetically suitable mate. However, to collect smells, especially in the wild, is anything but easy to accomplish. A team of researchers from the University of Leipzig and the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, have now succeeded in adapting a method that has previously been used in plant ecology for collecting body odour samples of captive meerkats. In the future this method can be used to collect body odour samples from mammals living in the wild.

The sense of smell is central to social communication in mammals and can convey information about individual attributes such as identity, sex, group membership or the genetic quality of a potential mating partner. A detailed understanding of olfactory communication, however, is hampered by the difficulty of obtaining adequate samples of mammalian scents, particularly in the wild. Researchers of the Junior Research Group "Primate Kin Selection" at the Max Planck Institute for Evolutionary Anthropology and the Research Group "Behavioural Ecology" at the University of Leipzig therefore adjusted a [sampling method](#) used in [plant ecology](#) to allow non-invasive sampling of mammalian body odour.

With this method the researchers collected the ambient air around an animal onto an adsorbent trap, which they then analysed with the help of gas chromatography-mass spectrometry to identify the [chemical](#) composition of the sample. "We collected samples from captive meerkats freely moving in their enclosures at the Zoo Leipzig and the University of Zurich," says first author Brigitte Schlögl, "We then varied sampling parameters such as the distance to the animals or the amount of air being sampled." This allowed the researchers to assess how different sampling parameters affect the chemical quality of the samples.

Ultimately, the researchers developed a sampling protocol that provides

high-quality chemical samples and is even feasible in the wild. For example for sampling habituated animals from a short distance or sampling nests or resting places after departure. "Using this protocol, we were able to pick up group differences in the chemical profiles of the meerkats," says Schlögl. This demonstrates the suitability of the method for answering biological questions.

"Hence, the method allows non-invasive studies on a wide range of questions related to olfactory communication, including e.g. chemical signatures of kinship, diet, individual health or reproductive state," says research group leader and co-author Anja Widdig.

More information: Brigitte M. Weiß et al. A non-invasive method for sampling the body odour of mammals, *Methods in Ecology and Evolution* (2017). [DOI: 10.1111/2041-210X.12888](https://doi.org/10.1111/2041-210X.12888)

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