

Answers to some of the questions I've been asked about winning the IG Nobel Prize in Biology 2021
Susanne Schötz (last updated 9 September 2021)

1. *Congratulations on the prize - what was your reaction when you heard?/ You must be pleased to win the award -- what was your reaction when you were told?*
- Thanks! I was very surprised, and honoured, of course!
2. *How far do you think science might take us in understanding animals?*
- There are still many aspects of nonhuman animal communication that we don't fully understand. I think that we need science to collect and systematically analyse controlled data and to test our hypotheses about animal communication. This may help us not only to understand animals better but also to improve animal wellbeing and welfare.
3. *Could you explain what you looked at in your study on cats, and what you found?*
- I studied the vocalisations that domestic cats use to communicate (with humans as well as with other cats) in different situations using the same methods (phonetic methods) that I normally use to study human speech. I looked at how cat vocalisations are produced and articulated, I listened carefully to thousands of vocalisations and wrote down the vowel and consonant-like sounds that they were made up of using a phonetic alphabet, and I analysed their acoustic properties. For each vocalisation, I asked the following questions: Is the mouth closed or open, and is it held still or does it move (e.g. from opening to closing)? Is the pitch high or low? Is the tone (melody) rising or falling? Is the sound long or short? What vowel or consonant-like sound units can I hear in the vocalisation? Is the voice quality normal (modal) or maybe breathy, pressed, or harsh? I found that cats have a large repertoire of different vocalisation types (e.g. purring, meowing, trilling, howling/yowling, growling, hissing, etc.) and that they vary them extensively, (for instance the intonation and voice quality) depending on the physical context (situation) and their mental or emotional state.
4. *What led you to look at these questions?*
- I share my home with six cats, and being a researcher of phonetics, I was intrigued by the many different sounds that my cats could produce and wanted to learn more about how large their vocal repertoire is and what the different sounds mean. Because if I become better at understanding their communicative signals, I may improve our relationship and increase the welfare and wellbeing of my cats.
5. *Is there anything you'd pull out as the strangest or most fascinating thing you've learnt about cat communication?/ Were you surprised by the findings?*
- I was surprised to learn that domestic cats have so many different call types and that the variation within each type is so large, depending on the individual cat (sex, age, personality, breed), the situation and the emotional state of the cat.
6. *Is there a chance your work might help us develop verbalisations / other communications that cats can better understand, so cats and humans understand each other better, rather than just humans understanding cats better?*
- There may be a chance. For instance, we can learn to use the universals of vocal communication better. These universals are present in the vocal signals of cats, humans and many other mammalian species. For instance, there is an association between pitch and the physical or mental size (honest or not) of the signaller: high pitch is associated with smallness, submissiveness, vulnerability, uncertainty and cooperativeness, while low pitch signals largeness, dominance, aggressiveness, certainty and protectiveness. Many humans already talk to their companion animals with a higher pitch than they use when talking to humans, perhaps to signal cooperativeness. However, cats also use other modalities, such as scent marks and body postures and movements to communicate.

Humans usually usually don't pay much attention to olfactory communication, or to what our body postures and movements may signal to cats – we usually prefer vocal communication. If we learn more about how cats communicate (in all modalities) and try to use this knowledge when interacting with cats, we may be able to understand each other better.

7. *Have the findings been useful? Are you better able to understand your own cats?*
 - Yes, to me my findings have been very useful. I am now much better at identifying what situation, mood and emotional state my cats are in just by listening to their vocalisations, so I would say that I understand my cats much better now than before I had carried out my studies.
8. *Do you have any additional points you'd like to make?*
 - I'd like to add that there is still much to learn about the vocal communication of cats. For instance, I recently noticed that some cats growl with the mouth completely closed. In earlier descriptions (including my own) growling is said to be produced with a slightly open mouth. More research is needed, and I'm hoping to continue to study the vocal and other communicative strategies of the cat in the future. I believe that if we learn to better understand the vocal strategies used by cats, we will become better at identifying cats who are content, friendly, discontent, aggressive, scared, stressed, or even in pain. Improving human–cat communication will increase the physical and mental wellbeing of cats as well as their caretakers.

Additional information and materials

If you want to learn more about my work on cat communication you could check out my book *The Secret Language of Cats* (available in several languages). You can also read about my current research project *Melody in Human–Cat Communication (Meowsic)* and listen to examples of many different cat vocalisations on our project website meowsic.se (under 'Cat Sounds' in the menu bar).

In case you want a picture of me (with or without cats), you can find some here (most of which may be used free of charge): <http://catladysweden.com/pictures.html>.