

## Is the Way Your Cat Purrs Similar to Human Snoring?

Unlike other vocalizations, purring doesn't require cyclical neural input in the cat's larynx. Instead, a special pad in their vocal folds may be responsible for the soothing, low-frequency sound, which resembles humans' vocal fry.

Analysis by Dr. Karen Shaw Becker

### STORY AT-A-GLANCE

- It was long believed that cat purrs were unlike other forms of vocalizations, requiring cyclical contraction in the vocal folds along with neural input from the brain
- But the cat larynx, or "voice box," produces purring sounds without any cyclical neural input, according to a University of Vienna study
- A special mass of tissue, or pad, in cats' vocal folds may be responsible for the soothing, low-frequency sound of your cat's purr
- Purrs may be produced in a similar way to humans' deep, creaky voice, or "vocal fry"
- While humans often associate the soothing sound of a cat's purr as a sign that their cat is content, cats also purr when they're injured or frightened, and to self-soothe, while they're in shelters and at the vet

It was long believed that cat purrs were unlike other forms of vocalizations, requiring cyclical contraction in the vocal folds along with neural input from the brain.<sup>1</sup> But a study from University of Vienna researchers is calling this theory into question after finding the cat larynx, or "voice box," produces purring sounds without any cyclical neural input.<sup>2</sup>

Instead, a special mass of tissue, or pad, in cats' vocal folds may be responsible for the soothing, low-frequency sound of your cat's purr, and the team suggested it's produced in a similar way to humans' deep, creaky voice, or "vocal fry."<sup>3</sup>

### Unique Pad Might Allow Cats to Purr

It's unusual that cats, being such small creatures, can produce such low-frequency purrs. "Typically, the larger the animal, the longer the vocal folds and so the lower the frequency of sound created," voice scientist Christian Herbst told New Scientist.<sup>4</sup> Herbst led the study, which may have revealed the mechanism behind the phenomenon:<sup>5</sup>

*"Anatomical investigations revealed a unique 'pad' within the cats' vocal folds that may explain how such a small animal, weighing only a few kilograms, can regularly produce sounds at those incredibly low frequencies (20-30 Hz, or cycles per second) — far below even than lowest bass sounds produced by human voices."*

While the findings don't necessary show that the prior theory about cat purrs requiring cyclical contraction is false, they do show that purring may be produced in the voice box similar to other cat sounds, like meows and screeches. According to the study:<sup>6</sup>

*"While our data do not fully reject the AMC [active muscle contractions] hypothesis for purring, they show that cat larynges can easily produce sounds in the purr regime with fundamental frequencies of 25 to 30 Hz without neural input or muscular contraction. This strongly suggests that the physical and physiological basis of cat purring involves the same MEAD-based mechanisms as other cat vocalizations (e.g., meows) and most other vertebrate vocalizations."*

## **Is Purring Produced Just Like a Meow?**

Still, some aren't convinced by the study, as it relied on pushing air through vocal cords from cats that had been euthanized due to terminal illness. David Rice, a biomechanical engineer with Tulane University, said this is "akin to removing the mouthpiece from a wind instrument and analyzing its sounds in isolation."<sup>7</sup>

While the method showed purring sounds could be produced from the vocal cord vibrations, without any input from the brain, it may be different from the process that occurs in live cats. But studying purring in cats is difficult, since they don't purr on demand. So, despite humans' long ties to cats, we still don't know exactly how cats purr — or why they do it.

## **Why Do Cats Purr?**

It's been suggested that purring may have developed to keep cats healthy as they spent long hours silently, and stilly, in wait of prey. Cats purr with a frequency between 25 and 150 Hertz, a sound frequency that is beneficial for improving bone density and healing.<sup>8</sup>

Purr frequencies also correspond to vibrational and electrical frequencies used to treat bone fractures, pain, muscle strains, wounds, joint flexibility and more, adding more credence to the theory that purrs may be a form of self-healing.<sup>9</sup> While humans often associate the soothing sound of a cat's purr as a sign that their cat is content, cats also purr when they're injured or frightened, while they're in shelters and at the vet.

Research also found that cats may use purrs to get food from their owners, and may even purr in a more urgent, unpleasant way, with a "cry" embedded, when they want to be fed. The study, published in *Current Biology*, noted:<sup>10</sup>

*"Domestic cats make subtle use of one of their most characteristic vocalizations — purring — to solicit food from their human hosts, apparently exploiting sensory biases that humans have for providing care. When humans were played purrs recorded while cats were actively seeking food at equal amplitude to purrs recorded in non-solicitation contexts, even individuals with no experience of owning cats judged the 'solicitation' purrs to be more urgent and less pleasant."*

*Embedded within the naturally low-pitched purr, we found a high frequency voiced component, reminiscent of a cry or meow, that was crucial in determining urgency and pleasantness ratings."*

Cats may also use purrs to self soothe, as a form of stress relief or to calm down, and they also use purrs after giving birth to lead their kittens, which are born blind and deaf, toward them.<sup>11</sup> Since cats also often purr when they're cozy on their owner's lap, getting a good scratch, it could also be a sign of happiness and contentedness — or a way to encourage you to keep doing what you're doing.

And most cat owners would agree, the sound of their kitty purring is welcome to their ears. "Probably the best sound in the world is the purr in your ear of a cat," James Buzzel, publisher and editor-in-chief of Your Catmagazine, told The Guardian. "I don't think any sound works better than that. There's a natural therapy about it."<sup>12</sup>

## Sources and References

<sup>1,3,5</sup> [University of Vienna October 4, 2023](#)

<sup>2,6</sup> [Current Biology October 3, 2023](#)

<sup>4</sup> [New Scientist October 3, 2023](#)

<sup>7</sup> [Smithsonian October 11, 2023](#)

<sup>9</sup> [Scientific American April 3, 2006](#)

<sup>9</sup> [The Journal of the Acoustical Society of America 110, 2666 \(2001\).](#)

<sup>10</sup> [Current Biology July 14, 2009](#)

<sup>11</sup> [PetMD March 3, 2020](#)

<sup>12</sup> [The Guardian October 3, 2023](#)

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