

Researcher creates bacteria strain to quell bad dog breath

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University of Arizona researchers have developed a harmless bacteria strain to battle bad breath in our furry friends.

When administered orally, the additive produces a minty aroma that improves dogs' breath, said inventor Eric Lyons, who developed the technology with co-inventor David Baltrus. Both are associate professors in the College of Agriculture and Life Sciences School of Plant Sciences.

"The applications of the invention are vast," Lyons said. "Our plan is that they will eventually find a home among all sorts of pet treats, food and [oral care products](#)."

Other products, such as toothpastes and chew treats, use flavors and scents to cover bad breath. When the harmless bacterial strain Lyons developed enters a dog's mouth, the bacteria remain for about two hours, producing a pleasant smell. The bacteria could be incorporated into specially formulated treats, chews and food for dogs, making them easy to use, Lyons said.

"We're working on improving the duration efficacy of the product up to eight or 12 hours, and we want to develop other scent offerings," he said.

With his background in genomics and genomics evolution, Lyons manages large research projects at the university's BIO5 Institute, including the \$115 million [CyVerse](#) program, which applies computational systems to biological research.

He and [business development](#) professional Scott Zentack—who has engineering and operational experience in various industries and has held corporate leadership positions in sales, marketing and finance—came up with the pet project to conquer canine halitosis while sitting around a campfire with their dogs.

"We figured that with all the knowledge available to scientists, we're now able to modify bacteria in the lab," Lyons recalled. "Why couldn't

we make a bacterium that makes dog breath smell better?"

He and Baltrus proceeded to develop the strain by screening hundreds of bacteria found in dog mouths, identifying 20 that were harmless and easy to modify. They synthesized DNA constructs, encoding enzymes for producing mint or pear smells, and put those genetic programs into the selected bacteria, choosing the ones that worked best for further development and optimization.

With help from [Tech Launch Arizona](#), or TLA, the university's commercialization office, the two co-founded a startup, uPetsia, to commercialize the new technology, leveraging Lyons' scientific knowledge and Zentack's industry expertise.

Through its programs for UArizona inventors, TLA provided services to refine and protect the intellectual property, as well as funding to develop the technology, and mentorship and coaching for the startup team. With that preparation, the startup licensed the technology from the university in March to take it forward into the market.

uPetsia is doing product trials and working with industry partners to develop methods to integrate the technology into existing pet foods and snacks.

The University of Arizona Center for Innovation, or UACI, the university's incubator at the UA Tech Park at Rita Road, recently accepted the startup into its program to help entrepreneurs develop and scale their operations.

Last week, uPetsia won the UACI Sponsored Launch Fueled by the Oro Valley Chamber of Commerce competition. As a winner, the startup will receive one sponsored year of admission at the UACI incubation program, with customized business support and the ability to work

alongside other startups in a fast-paced environment.

The team is considering expanding its technology to include other pets, but dogs and their owners are the first target market.

"We hope that future trials can help transition the product from an additive that only cures bad breath in pet animals into one that can prevent tooth decay and other oral maladies," Lyons said.

Provided by University of Arizona

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