

VET CANDY

APRIL 2022

SARS-COV-2 VARIANT
DETECTED IN DOGS
& CATS WITH
**SUSPECTED
MYOCARDITIS**

Endoparasitism of
**GOLDEN
RETRIEVERS**

3ways

TO RESOLVE
CONFLICT
AT WORK

VET CANDY
LAUNCHES
FREE RESOURCE
**TO PREPARE
FOR NAVLE**

FARMERS
CAN MONITOR
**ANIMAL
EMOTIONS**

CAN PIGS
COMMUNICATE?
**RESEARCHERS
SEEM TO
THINK SO!**

DR. AZIZA GLASS

on finding purpose in life

+ much more

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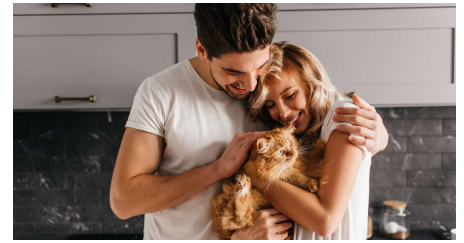
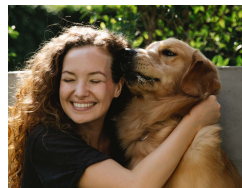
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Welcome to the world of
VET CANDY

Dr. Jill López



Welcome readers! I am delighted to share some stories with you this month, including one about our cover star, Aziza Glass. She is the founder of Personal Touch Veterinary Clinic, a mobile practice in Houston, Texas, incorporates eastern medicine, like acupuncture and Chinese herbal formulas, with traditional western medicine. Her story is amazing and I hope it inspires you to find your purpose.

Speaking of mobile clinics, did you know that they are becoming the hottest trend in vet med these days? In fact, Betsy Saul, the founder of Petfinder.org is teaming up with animal related charities to bring mobile veterinary care to animals areas in need across the U.S. One of the most interesting parts of her new company, Heal Housecall Veterinarian, is that she helps veterinarians incubate their own practices. So, when you team up with her group, you you're your community plus you create your own business with their help. You can read all about it in this issue!

April also means time for the NAVLE exam. I remember how hard it was when I had taken my test and I can only imagine that it is much more difficult these days, especially dealing with vet school during the pandemic. We love our veterinary students and we want to make their lives easier. That's why Vet Candy launched Student Prep - a free resource to prepare veterinary students for NAVLE and real life. Check out the story below to learn more.

As always, I would like to thank my assistant editor, Shannon Gregoire, and our team of amazing writers. Without their help, this issue wouldn't be possible.

If you have stories you would like to share, please reach out to us at hello@myvetcandy.com. Thank you for reading.

Welcome to the world of
VET CANDY

By Jenn Boon



Dr. Aziza Glass

on FINDING
purpose in life

It's a rare thing to find your calling in life, but Dr. Aziza Glass has done it.

As a Doctor of Veterinary Medicine and graduate from Cornell University, she now owns Personal Touch Veterinary Clinic, where her focus is on integrative medicine with an emphasis on acupuncture and other alternative modalities.

But above all, it's about helping others and remaining true to herself.

"My mission in life is to make sure I utilize the gifts and talents God has given me, maximize them and in turn, take care of my family and help my community while He receives all the glory," she says.

Let's talk self-determination and work culture with Dr. Glass!

Fresh out of veterinary school? Here's Aziza's take on finding your true path

Dr. Aziza Glass opened her own practice in 2018 and, since then, has carved out a very unique path in the field of veterinary medicine. Her practice (Personal Touch Veterinary Clinic – or PTVC, for short) is unlike anything else you might expect to find at an ordinary vet clinic.

For one thing, it's a mobile practice.

Dr. Glass sees pets in their homes. This removes a lot of the stress and environmental pressures that come with transporting cats, dog, or larger animals like horses.

By blending eastern and western medicine, she offers treatments including acupuncture, herbal medications, and food consultation in addition to all the routine services a veterinarian carries out for their four-legged patients.

However, like many new vet grads, Dr. Glass didn't find her calling right away.

"As a young veterinarian fresh out of school, I had to navigate a lot of challenges new graduates overcome," she explains. "From growing in confidence to learning how to navigate vet medicine in the real world."

Unfortunately, one of these "real world" challenges had to do with a toxic work environment. Feeling the joy being sucked out of her job and struggling with ongoing microaggressions from clients, co-workers, and company executives who made her question the longevity of her profession, Aziza admitted her discontent to a mentor.

The advice he gave?

Lifechanging.

She recalls, "He advised me to create my own space, my own lane. It was empowering to hear this from a veteran in the field because it confirmed I was not crazy, my feelings were valid, and gave me permission to embrace my interests outside the immediate scope of veterinary medicine. It also helped me to prioritize my mental health and in turn, improved my work life balance."

So, to all the veterinarians out there who may be struggling...

Take Dr. Glass' words to heart.

Sometimes, the path you are on is leading to a greater destiny.

Big problems in the veterinary field require big solutions

The Covid-19 pandemic highlighted a lot of problems in healthcare, both for humans and animals.

The biggest one, according to Dr. Glass?

A resistance to change toxic work culture.

Before, veterinarians were often expected to commit to 60 hours a week for below average pay, with subpar benefits and high student loans.

On top of this, it could be difficult (if not downright impossible) to book time off or get support for mental health issues, which is incredibly important, seeing as compassion fatigue can quickly lead to burnout.

And while there is a significant push toward improving mental health in the workplace, vets must ask themselves: is it enough?

Luckily, Dr. Aziza points out that these giant problems actually have quite straightforward solutions!

She advocates for a holistic approach to veterinarians' mental health, earned respect, and an acknowledgement of diversity, equity, and inclusion. Also don't forget, we are human beings – not workhorses!

With incredible people like Dr. Aziza Glass in our corner, we can't help but feel excited about the future of veterinary medicine!



Dog show grieving behavior after death of canine companion

Behavioral and emotional changes exhibited by dogs after the death of another dog in the same household could be indicative of grief, according to a survey of 426 Italian dog-owners published in *Scientific Reports*.

Although grieving behaviors have been reported in a variety of animals, including birds and elephants, it has been unclear whether domestic dogs grieve.

Federica Pirrone and colleagues surveyed adults whose pet dog had died while they also owned at least one other dog. The owners, of whom 66% had lost their dog over one year before the study, were asked about any changes in the surviving dog's behavior after the death. Additionally, owners described the prior relationship between their dogs and their own distress levels after the bereavement.

86% of owners observed negative changes in the surviving dog's behavior after the death of their other dog. 32% reported that these lasted between two and six months and 25% reported that they lasted longer than six months. When asked to describe these behavioral changes, 67% of owners reported that the surviving dog became more attention seeking, 57% reported that they played less, and 46% reported that they became less active. 35% of owners reported that the surviving dog slept more and became more fearful, 32% reported that they ate less, and 30%



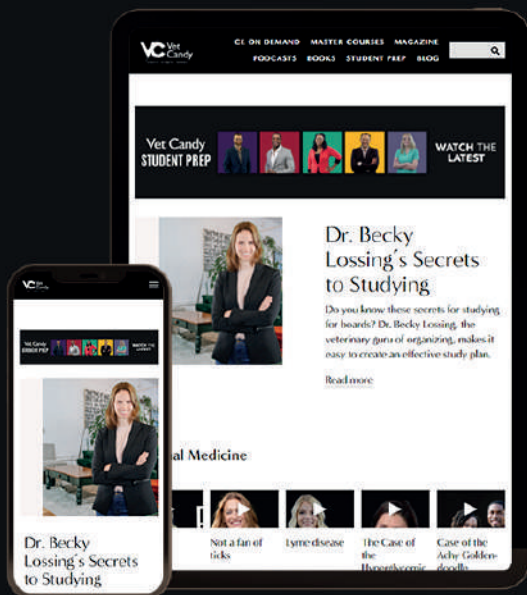
reported an increase in whining or barking. Prior to the loss of their pet, 93% of owners reported that their dogs had lived together for longer than one year and 69% described the relationship between their dogs as friendly.

The researchers found that whilst the length of time two dogs had lived together did not influence surviving dogs' behavior, having had a friendly relationship with the deceased dog and having a grieving owner made negative behavioral changes and fearfulness more likely in surviving dogs. This suggests that negative behavioral and emotional changes observed in surviving dogs could be due to both a grief-like reaction in response to the loss of their companion and a reaction to the grief of their owners. The authors conclude that grief-like responses among dogs are potentially a major pet welfare issue that has been overlooked.



PREPARE FOR NAVLE®

Anytime, anywhere, for free!



VET CANDY STUDENT PREP

250+ Practice questions

50+ Video lessons

10+ Course books

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VET CANDY LAUNCHES FREE RESOURCE TO PREPARE FOR **NAVLE**



Veterinary students are faced with the challenge of balancing their school life, with time for studying for their licensing board- NAVLE®, along with their personal life. Mix that with dealing with the stress of a world-wide pandemic and now there is even more pressure to keep up.

That's why Vet Candy is launching Student Prep - a free resource to prepare veterinary students for NAVLE and real life. With more than 50 expert guided video lessons, more than 10 course books, and more than 250 practice questions, Vet Candy's student prep is your best source for preparing for the exam.

"Vet Candy is committed to providing fun, engaging, and educational experiences for veterinary students," said Dr. Jill López, veterinarian and CEO of Vet Candy. "With our Student Prep, we are offering a way for veterinary students to enjoy themselves while learning about complicated disease processes from some of the coolest **veterinarians** on the planet!"

Highlights

- Includes more than 50 studio-quality, on-demand educational videos filmed in 4K and available in 1080p HD.
- Video lessons can be streamed anywhere, anytime, at your own pace!
- Ten course books cover most of the most relevant subject matter, including ophthalmology, toxicology, and respiratory disease.
- More than 250 sample questions to test your knowledge

Vet students are also given test strategy, courtesy of veterinary organization expert, Dr. Beckly Lossing, which focuses on taking micro steps and focusing on species based on 10-hour study increments.

"The idea is to make learning fun," says Vet Candy's CEO and Founder, Dr. Jill Lopez, "Our studio-quality, on-demand videos lessons feature the world's most exciting experts like Dr. DJ Haeussler, Dr. Carey Hemmelgarn, and Dr. Craig Clifford.

Vet Candy delivers world class content, with engaging voices and inspirational messages curated by a network of top influencers and experts. Sign up at [myvetcandy](https://myvetcandy.com) or follow @myvetcandy to stay connected to the latest veterinary updates, scientific news, and lifestyle advice.

Check it out at myvetcandy.com/prep



Read this before you sign that contract!



by Jenn Boon

Hooray!

You have successfully completed an interview, the panel seemed to love you, and now they want to offer you a job working at their veterinarian office.

It's like a dream come true.

But before signing on the dotted line, have you read over the contract in detail? Chances are, buried in the pages of paperwork is a non-compete clause. This little section of text might only be a couple of sentences long, but it's incredibly important. A bad, poorly written, or otherwise unethical non-compete agreement has the potential to turn that exciting new job into, well... a veterinarian's worst nightmare for long term career growth!

The last thing you want is to be restricted professionally or to feel stuck in a position you can't leave. So, to help vets focus on their animal

patients and doing what they love (instead of feeling confused, angry, unfairly treated, taken advantage of, etc.), we have compiled a list of everything you need to know about non-compete contracts.

What is a non-compete agreement?

Firstly, let's define what a "non-compete agreement" really is.

According to NOLO.com, a non-compete agreement is a legally binding document which "states that the employee will not directly compete with the employer after termination of employment."

So, when veterinarians resign from their current position, depending on the nature of the agreement, they can be limited geographically and by time. For instance, saying you cannot go work for another office within a 30-mile radius within three years of quitting. Depending on your location, that 30-mile radius could drastically affect your ability to make a living.

Why would a hiring manager insist on such rules?

Think about it this way: If you were the owner of a practice, the last thing you would likely want is for a former employee to set up shop – so to speak – right across the street. Non-compete agreements are also meant to stop vets from “stealing” clients or increasing local competition. But this can be horribly controlling for vets who need to switch jobs, for whatever reason. Suddenly, the daily commute is longer, childcare might not be available, housing costs are different, the town or city is unfamiliar, you have no professional reputation in this new place, and your livelihood is under threat. However, that doesn’t mean that they can create terms that are not fair or legal.

Oh dear...

That’s why knowing about red flags, warning signs, and how to understand ambiguous contract language is key.

The devil is in the details! What to look for

When it comes to veterinary non-compete agreements, you’ll want to keep your eye out for three details:

1) Geography

This covers where you can practice. Veterinarians looking to settle down in a desired area should be very careful about agreeing to this element of the contract, especially if they work in rural settings with a smaller population to serve. Radius limits can be enforceable.

2) Length of Time

Next is how long you must wait after leaving one job to start another. Again, different states will have different rules. Looking to live in Washington, DC? Good news. Non-compete agreements can only last a maximum of 18 months. However, that can’t be said for other places. Knowing the law helps you avoid unproductive months of waiting around for the clock to expire.

3) Nature of Activities

Lastly, read over the details pertaining to what you’re allowed to do. Though these are rarer, it is possible for a clause to restrict a veterinarian from offering some services, particularly if they were highly specialized. Some contracts may restrict you from working per diem in the area or working part-time for a telemedicine app.

The importance of having an attorney look things over

As you can see, understanding the delicate ins and out of a contract is no small feat.

And you are a trained veterinarian – not a lawyer.

This is why you should hire an attorney who works in employment law to review your contract before you sign it. Remember, state laws regarding non-compete clauses vary widely. What is true and enforceable by the court of law in New York will be vastly different from what veterinary professionals face in, say Arizona!

A specially trained attorney will help navigate these murky waters.

Negotiating a fair contract is a team effort. And yes, it will cost you to have the attorney review, but the money you pay for this would be much less than the costs of fighting the contract in court later, or simply being miserable in a job that you hate and can’t leave because of the signing.

Uh oh. I find myself in a horrible contract. What now?

Before pulling your hair out and crying, take a deep breath. Yes, being locked into a terrible contract is scary, but you may have a way out, especially if the contract is unfair or doesn’t meet state rules.

However, veterinarians do have options and that means contacting an employment lawyer, ideally one who has experience handling similar cases. Depending on the nature of the original agreement language, it might be possible to challenge the non-compete. For instance, maybe the length of time is no longer reasonable. Two years is a long time! Could it be negotiated down to 1? Lawsuits are pricey and time consuming. It could be easier to settle.

Similarly, those stuck in awful contracts can inquire about enforceability.

Above all, know your rights. Read every single word extremely carefully and chat with a lawyer beforehand to ensure smooth sailing at this job, and your next one, too!

Find an employment lawyer before you sign a contract: <https://www.nela.org>



Treating intractable diarrhea in calves and improving intestinal microflora

Diarrhea is common in calves and causes enormous financial losses to the livestock industry worldwide. Antibiotics have been widely used to treat this enteric disease. However, improper use of antibiotics for industrial animals not only disturbs their indigenous microbiome - the collection of healthy bacteria stored in their bodies - but also leads to antibiotic-resistant bacteria on farms.

A research group led by Jahidul Islam and Tomonori Nochi from Tohoku University's Graduate School of Agricultural Science and by Hidekazu Tanaka from Chiba Prefectural Federation of Agricultural Mutual Aid Association set out to promote an alternative strategy to cultivate robust microflora without using antibiotics.

To do so, they harnessed the efficacy of fecal microbiota transplantation (FMT) to treat intractable diarrhea in calves. FMT involves transplanting healthy donor-derived feces into calves with intractable diarrhea. The group was successful in predicting the fecal microorganisms and metabolites that translated into a more efficient FMT.

Details of their research were published in the journal *Microbiome* on February 21, 2022.

Nochi states the project stemmed from the need to make FMT a more routine veterinary practice to improve the microbial community of calves suffering from infectious diseases. "Veterinarians have struggled to cure calves suffering from intractable diarrhea and often resort to giving animals further inappropriate antibiotics."

The team's research revealed three important factors in treating animals with FMT: *Selenomonas* is a microorganism genus that shows significant donor-recipient compatibility in FMT; low levels of several metabolites in donor and recipients prior to FMT are predicted to facilitate FMT; and genus *Sporobacter* is a potential biomarker in superior donor selection.

"Our results provide considerable insights into the development of future microbial therapeutics for treating diarrhea in calves," added Nochi.

RESEARCHERS DISCOVER GENETIC CAUSE OF

MEGAESOPHAGUS IN DOGS

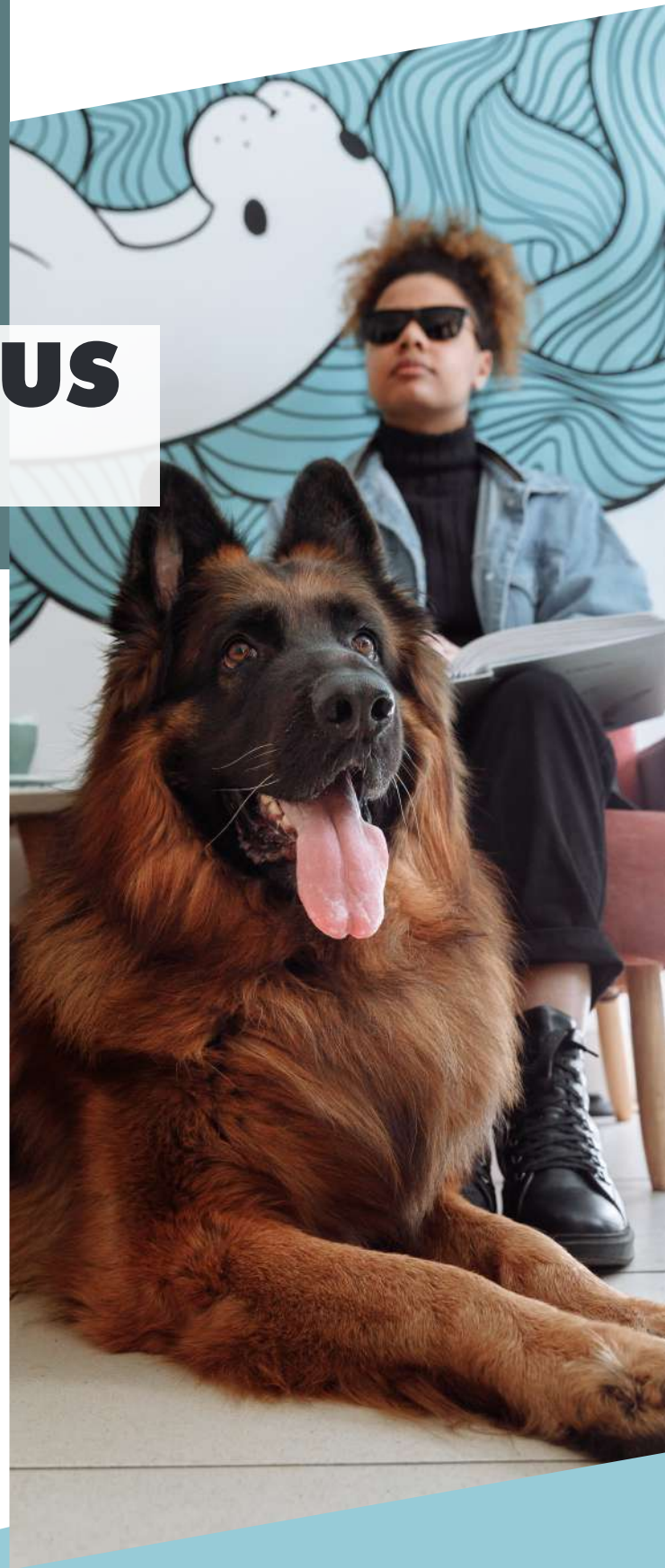
Researchers have discovered the underlying genetic variation that leads to congenital idiopathic megaesophagus (CIM), a frequently deadly gastrointestinal disorder that commonly affects German shepherd dogs. Leigh Anne Clark of Clemson University, U.S. and colleagues report the discovery in a new study publishing March 10th in the journal PLOS Genetics.

Megaesophagus is an inherited disorder that causes puppies to develop an enlarged esophagus that fails to pass food into the stomach. Often, these puppies cough up their meals and don't gain weight effectively, leading to euthanasia. In the new study, Clark and her colleagues performed a genome-wide scan to identify genes associated with the disorder. The screen pointed to a genetic variant in the gene that codes for melanin-concentrating hormone receptor 2 (MCHR2), a protein that plays a role in appetite, weight and the movement of food through the gastrointestinal tract.

The researchers also discovered that male German shepherds have the disorder almost twice as often as females. They suspect that the higher levels of estrogen in female dogs may help protect them from developing a severe form of the disease.

After identifying the genetic region linked to megaesophagus, the researchers developed a genetic test for the disease. The results of the test, along with the dog's sex, can predict whether a dog will develop the disease with 75% accuracy. Dog breeders can now use the test to make breeding decisions that will reduce the risk that puppies will develop the disease.

Clark adds, "By identifying the major genetic contributor to CIM in German shepherd dogs, we have provided breeders with a tool that they can use to reduce disease incidence while preserving genetic diversity."



3 ways to resolve conflict at work

By AM Kuska

Some people seem to relish arguing with others about the best way to move forward on a project or problem. They might have been members of the debate team, or like the feeling of verbal jousting. You? Not so much. You'd rather avoid these difficult conversations thank you very much, and you don't want to debate anything. Ever.

Unfortunately, conflicts are a part of life. It may be that your significant other keeps butting up against a very important boundary for you, or that a coworker doesn't seem to understand that your home-packed lunch is not up for grabs. Conflict avoidance is fairly normal, but it can also cause great harm to the person who would rather not address a problem. When left unchecked, problems can grow and fester. What might have been a simple issue of stolen lunch can grow into quitting a job you love or hating your work—or in the case of a relationship, ending things.

Rather than avoiding conflicts until you can't stand it anymore, it's best to face the more important issues head on. Even if you don't like conflict, using a few simple strategies to work through discussing a problem can help you get your point across with as little drama as possible.

Be direct

You know Sally is taking your food. Sally knows she is taking your food. There is no point in coyly beating around the bush. The best way to address a conflict is to state the problem as clearly as possible.

If the problem is harder to state than food theft, it may be worth taking some time before this conversation to work out specifically what is bothering you and why. Vague details may not help the situation, and require you to have more than one conversation to clear things up. If you're conflict avoidant, more uncomfortable

conversations are the worst, so it's worth taking time to make what's bothering you clear.

Be willing to listen

It may be that Sally is food insecure. Perhaps the only meal she has to look forward to each day is the one she helps herself to out of the workplace fridge. Part of conflict resolution is to listen to the reasons why these things are occurring, and to try to find a way forward that resolves the conflict.

Other times, they may be simply unaware that what they're doing is a problem. You might feel violated by what they're doing, but they're not even aware that it's a problem. If they genuinely didn't know, it's always best to give others the benefit of the doubt.

Think positive

You should approach every conflict with the expectation that it will turn out well in the end. A positive outlook will help color your conversation in a positive way, and hopefully help guide things in that direction. The entire point of addressing conflict is to get a positive result, expecting one is a good start.

Conflict is hard. Many of us don't enjoy sticking our necks out there and discussing a problem. Sometimes however, it's necessary to get what we want out of a career or relationship.





CAN PIGS COMMUNICATE?

RESEARCHERS SEEM TO THINK SO!

We can now decode pigs' emotions. Using thousands of acoustic recordings gathered throughout the lives of pigs, from their births to deaths, an international team of researchers is the first in the world to translate pig grunts into actual emotions across an extended number of conditions and life stages. The research is led by the University of Copenhagen, the ETH Zurich and the France's National Research Institute for Agriculture, Food and Environment (INRAE), and can be used to improve animal welfare in the future.

Is a pig grunt worth a thousand words? Perhaps so. In a new study, an international team of researchers from Denmark, Switzerland, France, Germany, Norway and the Czech Republic have translated pig grunts into emotions. The findings have been published in Scientific Reports.

Using more than 7000 audio recordings of pigs, the researchers designed an algorithm that can decode whether an individual pig is experiencing a positive emotion ('happy' or 'excited'), a negative one ('scared' or 'stressed') or somewhere in between. The recordings were collected in a wide range of situations encountered by commercial pigs, both positive and negative, from when they are born until their deaths.

"With this study, we demonstrate that animal sounds provide great insight into their emotions. We also prove that an algorithm can be used to decode and understand the emotions of pigs, which is an important step towards improved animal welfare for livestock", says Associate Professor Elodie Briefer of the University of Copenhagen's Department of Biology at the University of Copenhagen, who co-led the study.

SHORT GRUNTS ARE 'HAPPY' GRUNTS

The researchers recorded pig sounds in both commercial and experimental scenarios which, based on the behavior of the pigs, are either associated with a positive and negative emotion. Positive situations included, for example, those when piglets suckle from their mothers or when they are united with their family after being separated. The emotionally negative situations included, among others, separation, fights between piglets, castration and slaughter.

In experimental stables, the researchers also created various mock scenarios for the pigs, designed to evoke more nuanced emotions in the middle of the spectrum. These included an arena with toys or food and a corresponding arena without any stimuli. The researchers also placed new and unfamiliar objects in the arena for the pigs to interact with. Along the way, the pigs' calls, behavior and heart rates were monitored and recorded when possible.

FARMERS CAN MONITOR ANIMAL EMOTIONS

Farmers can monitor animal emotions

The study of animal emotions is a relatively new field that has come about over the last 20 years. Today, it is widely accepted that the mental health of livestock is important for their overall well-being. Nevertheless, today's animal welfare focuses primarily on the physical health of livestock. Indeed, several systems exist that can automatically monitor an animal's physical health for a farmer.

Analogous systems to monitor the mental health of animals have yet to be developed. The researchers of the study hope their algorithm might pave the way for a new platform for farmers to keep an eye on their animals' psychological well-being.

"We have trained the algorithm to decode pig grunts. Now, we need someone who wants to develop the algorithm into an app that farmers can use to improve the welfare of their animals", says Elodie Briefer.

She adds that, with enough data to train the algorithm, the method could also be used to better understand the emotions of other mammals.

FACTS:

- The researchers recorded 7414 sounds from 411 pigs in different scenarios, from birth to death.
- A machine learning algorithm was trained to decode whether pig calls can be classified as a function of positive or negative emotions.
- The researchers defined the emotions of pigs based on how they naturally react to various positive and negative external stimuli, and whether stimuli can improve (positive) or threaten (negative) their lives.
- For example, typical signs of negative emotions in pigs are that they stand still, emit a lot of vocalizations, and try to escape, while positive ones include exploring their surroundings and having their ears postured forward.
- Positive situations included huddling with littermates, nursing, positive conditioning, enrichment, reunion with the mother, and freely running.

The researchers then analyzed the more than 7000 audio recordings to see if there was a pattern in the sounds as a function of the emotions, and if they could discern the positive situations and emotions from the negative ones. As already revealed in previous research, the researchers collected more high-frequency calls (such as screams and squeals) in negative situations. At the same time, low-frequency calls (such as barks and grunts) occurred both in situations where the pigs experienced positive or negative emotions.

The situations between the extremes were particularly interesting. With an even more thorough analysis of the sound files, the researchers found a new pattern that revealed what the pigs experienced in certain situations in even greater detail.

"There are clear differences in pig calls when we look at positive and negative situations. In the positive situations, the calls are far shorter, with minor fluctuations in amplitude. Grunts, more specifically, begin high and gradually go lower in frequency. By training an algorithm to recognize these sounds, we can classify 92% of the calls to the correct emotion", explains Elodie Briefer.



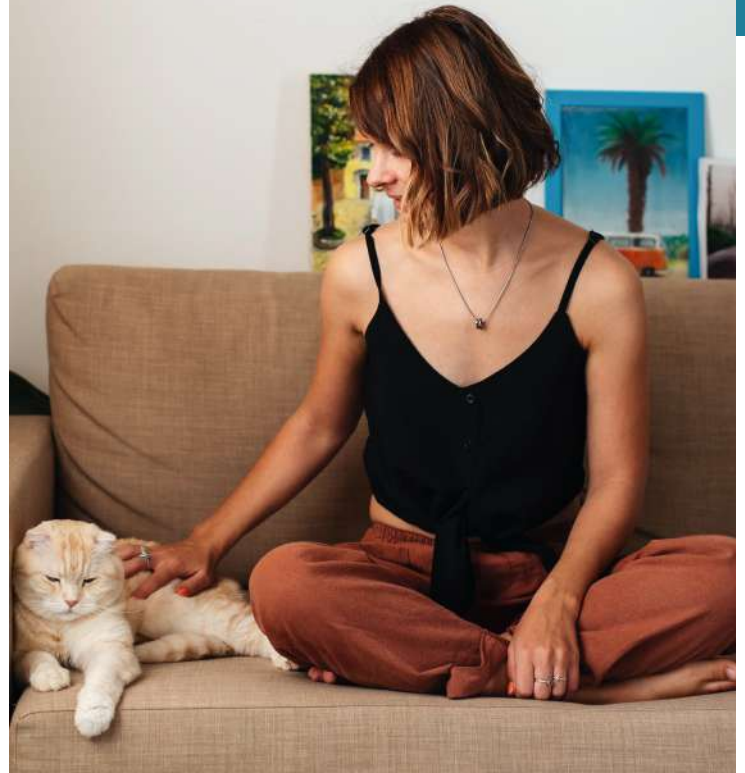
DELTA VARIANT OF COVID-19 FOUND IN CAT

Since being identified in people in 2019, SARS-CoV-2 has gone on to infect a wide range of animal species, wild and domestic. Concerns abound that these species jumps could lead to novel mutations and even harmful new variants.

In a new report, researchers from the University of Pennsylvania's School of Veterinary Medicine and Perelman School of Medicine find that, for at least one example of apparent interspecies transmission, this crossing the species boundary did not cause the virus to gain a significant number of mutations.

Writing in the journal *Viruses*, the scientists identified a domestic house cat, treated at Penn Vet's Ryan Hospital, that was infected with the Delta variant of SARS-CoV-2 subsequent to an exposure from its owner. The full genome sequence of the virus was a close match to viral sequences circulating in people in the Philadelphia region at the time.

"SARS-CoV-2 has a really incredibly wide host range," says Elizabeth Lennon, senior author on the work, a veterinarian, and assistant professor at Penn Vet. "What this means to me is that, as SARS-CoV-2 continues to be prevalent in the human population, we need to watch what's happening in other animal species as well."



The find is the first published example of the Delta variant occurring in a domestic cat in the United States. Notably, the cat's infection was only identified by testing its fecal matter. A nasal swab did not result in a positive test.

"This did highlight the importance of sampling at multiple body sites," says Lennon. "We wouldn't have detected this if we had just done a nasal swab."

Lennon and colleagues have been sampling dogs and cats for SARS-CoV-2 since early in the pandemic. This particular pet cat, an 11-year-old female, was brought to Ryan Hospital in September with gastrointestinal symptoms. It had been exposed to an owner who had COVID-19—though that owner had been isolating from the cat for 11 days prior to

its hospitalization, another household member doing the cat care in the interim.

Working through the Penn Center for Research on Coronaviruses and Other Emerging Pathogens and Perelman School of Medicine microbiologist Frederic Bushman's laboratory, the team obtained a whole genome sequence of the cat's virus.

Sequencing revealed the Delta variant, more specifically, the AY.3 lineage. The researchers did not have a sample from the infected owner. Comparing the sequence to the database kept by the Bushman laboratory, however, the cat's virus was nothing out of the ordinary in terms of the sequences of SARS-CoV-2 circulating in the Delaware Valley region at the time.

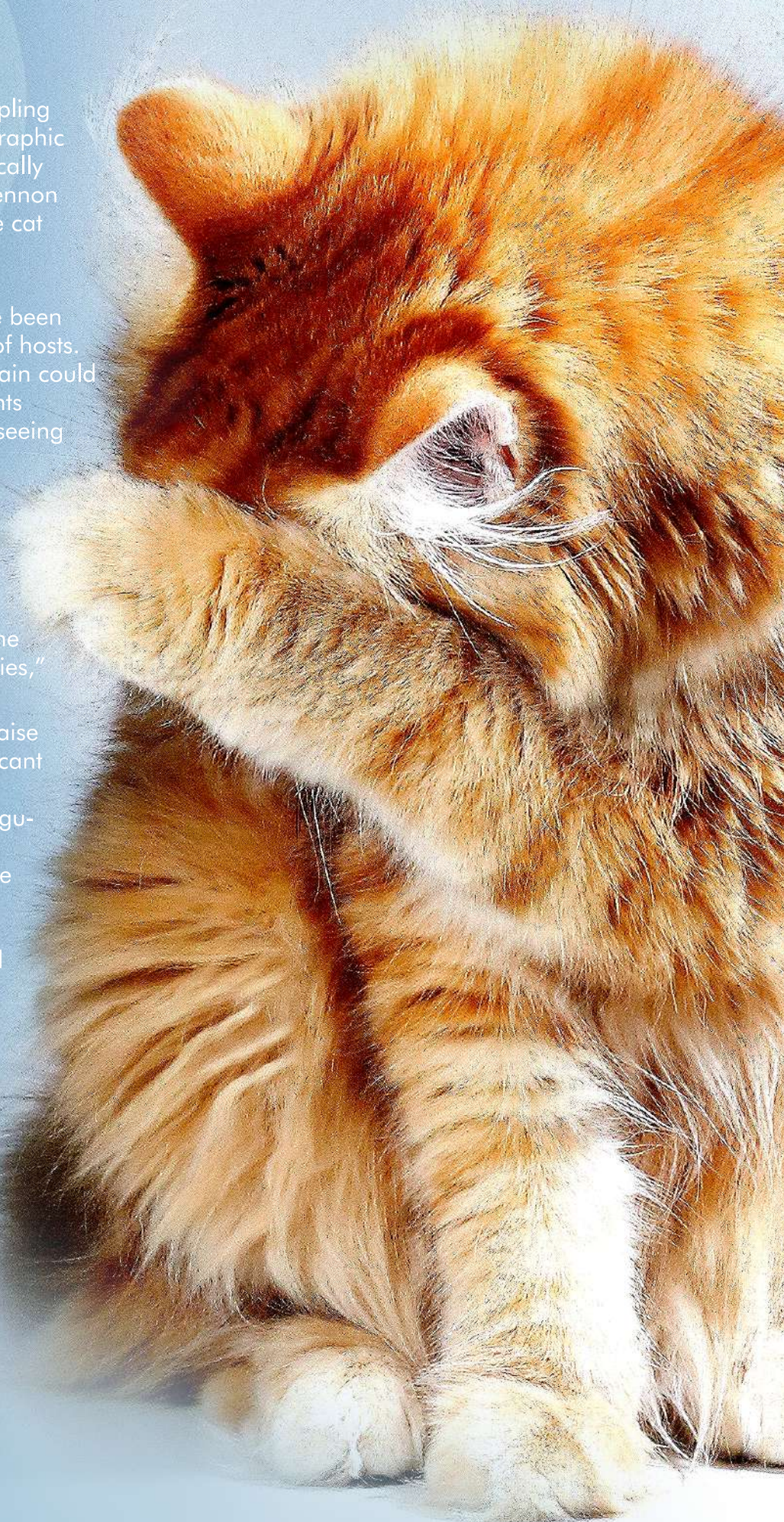
"When we looked at a random sampling of human sequences from our geographic area, there wasn't anything dramatically different about our cat's sample," Lennon says. "So, our takeaway was that the cat was not infected by a virus that was somehow highly different."

Not all variants of SARS-CoV-2 have been equally able to infect a wide range of hosts. For example, the original Wuhan strain could not naturally infect mice; later variants gained that ability. Scientists began seeing infections in cats and dogs from the early days of the pandemic, presumably infected through close contact with their owners.

"A main takeaway here is that as different variants of SARS-CoV-2 emerge, they seem to be retaining the ability to infect a wide range of species," Lennon says.

While this particular case does not raise alarms for the virus acquiring significant numbers of mutations as it moved between species, Lennon and colleagues, including Bushman and Susan Weiss of Penn's medical school, hope to continue studying other examples to see how SARS-CoV-2 evolves. Penn Vet's Institute for Infectious and Zoonotic Disease will facilitate this look at human-animal interactions when it comes to pathogen transmission.

"We know that the SARS-CoV-2 is undergoing changes as it passes between to become more and more transmissible over time," says Lennon. "We saw that with the Omicron variant. It's host-adapting to people. We also want to know, when other animal species get infected, does the virus start to adapt to those species? And for those viruses that may adapt to a different species, do they still infect humans?"



Endoparasitism of Golden Retrievers

A study evaluated data collected from 3,018 owned golden retrievers that were less than 3 years of age. Data collected included complete blood count, serum biochemistry, and fecal flotation. The overall prevalence of endoparasitism was 6.99% (211/3018). Dogs who were parasite positive had lower albumin, lower RBC count, higher neutrophil count, and higher platelet count as compared to negative dogs.

It was also concluded that dogs living in rural areas were more likely to have endoparasites than those living in suburban areas.

Read more by clicking on the link below:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8856576/>

Endoparasitism of Golden Retrievers: Prevalence, risk factors, and associated clinicopathologic changes



Do pets have a positive effect on our brain health?



Owning a pet, like a dog or cat, especially for five years or longer, may be linked to slower cognitive decline in older adults, according to a study that will be presented at the **American Academy of Neurology's 74th Annual Meeting in April**.

"Prior studies have suggested that the human-animal bond may have health benefits like decreasing blood pressure and stress," said study author Tiffany Braley, MD, MS, of the University of Michigan Medical Center in Ann Arbor and a member of the American Academy of Neurology. "Our results suggest pet ownership may also be protective against cognitive decline."

The study looked at cognitive data from 1,369 older adults with an average age of 65 who had normal cognitive skills at the start of the study. A total of 53% owned pets, and 32% were long-term pet owners, defined as those who owned pets for five years or more. Of study participants, 88% were white, 7% were Black, 2% were Hispanic and 3% were of another ethnicity or race.

Researchers used data from the Health and Retirement Study, a large study of Medicare beneficiaries. In that study, people were given multiple cognitive tests. Researchers used those cognitive tests to develop a composite cognitive score for each person, ranging from zero to 27. The composite score included common tests of subtraction, numeric counting and word recall. Researchers then used participants' composite cognitive scores and estimated the associations between years of pet ownership and cognitive function.

Over six years, cognitive scores decreased at a slower rate in pet owners. This difference was strongest among long-term pet owners. Taking into account other factors known to affect cognitive function, the study showed that long-term pet owners, on average, had a cognitive composite score that was 1.2 points higher at six years compared to non-pet owners. The researchers also found that the cognitive benefits associated with longer pet ownership were stronger for Black adults, college-educated adults and men. Braley says more research is needed to further explore the possible reasons for these associations.

"As stress can negatively affect cognitive function, the potential stress-buffering effects of pet ownership could provide a plausible reason for our findings," said Braley. "A companion animal can also increase physical activity, which could benefit cognitive health. That said, more research is needed to confirm our results and identify underlying mechanisms for this association."



With the combination of nanotechnology and immunology work, the researchers targeted this delivery platform to develop nanoparticles displaying viral proteins as a vaccine candidate. The nanoparticle allows the researchers to put molecular adjuvant inside the particle, allowing it to become more potent.

“Once you decorate the nanoparticle with viral proteins, the nanoparticle looks like a virus particle,” Zhang said. “Once you give that to the animal, it can have a very strong immune response toward the viral proteins on the nanoparticle to protect the vaccinated animals from the invading virus.”

This platform has been used for other vaccines, and the researchers thought that, because of its success elsewhere, it would be a good candidate for their PEDv vaccine.

With the nanoparticle platform, the immune response can last quite a long time once injected into the subject. The initial shot could last as long as six months with a booster needed to complete the vaccine series – a common practice among vaccines of varying delivery platforms.

“If we formulate the nanoparticle well, the immunity the vaccine can provide protection for is around half a year,” Zhang said. “But we have not tested beyond that duration using the nanoparticle delivery platform. It’s an extremely important subject to tackle.

“This is a good duration to target,” Zhang continued, “because a body really doesn’t need a lot of antibodies circulating to provide a good immune response.”

With the continued support of the Center for Emerging, Zoonotic, and Arthropod-borne Pathogens, the Fralin Life Sciences Institute, and the College of Agriculture and Life Sciences, the researchers have cutting-edge technology to tackle current and future viruses in animals of all species.



Why we love

Betsy Saul



by Jenn Boon

Not many people can say they found homes for over 10 million animals. But Betsy Saul can!

All throughout her professional life, Betsy has dedicated herself to pet adoption, rescue, and animal welfare causes. In the early 90's, she saw firsthand how badly shelters were struggling to keep their heads above water. With record breaking euthanasia rates across the country, she (alongside her partner Jared Saul) decided to act...and Petfinder was born.

Before long, it became the world's #1 pet site.

However, despite this success story that she's often applauded for, Betsy knew deep down in her heart there was more to do. And so, she did!

Nowadays, she is the CEO of Heal House Call Veterinarian.

The questions she was asking started to transition from, “How can I save pet lives?” to “Where are the gaps in veterinary care, and how can I make sure both pets – and the veterinarians who serve them – have access to the resources they need?”

Saul came up with a plan.
Her goal?

To nurture 50 independently owned Heal Impact Practices in 10 states, with an investment of \$14 million/year for 3 years.

In her words, “With Petfinder we helped pets. Now we need to come together to help vets and strengthen communities. We can accomplish this by empowering independent veterinarians to care for the pets that need it most.” It’s a big dream, but one Pet Candy and other solution-focused partners everywhere will be excited to support.

What is HEAL?

Community based care for our most vulnerable four-legged friends

At its core, A Heal Impact Practice is a new model for veterinary practices that promotes access to care, inclusion, and provides leadership opportunities for community-positive veterinarians. It’s the answer to the problems both people and their pets are seeing.

Let’s face it, there is currently a crisis in veterinary care.

Data shows that approximately 70% of U.S. households own at least one pet. This is equal to roughly 90.5 million families. Yet tragically, with three-fourths of American households living paycheck to paycheck, it can be difficult to prioritize and access medical care. Or catch health concerns before they become chronic.

Add to that resource deserts, and we see the issue compound.

With Heal Impact Practices, things are done differently.

Heal empowers independently-owned house call

practices, ensuring that the financial and social profits generated stay in the community. That means more targeted care, less stress for clients and their pets, and a much more holistic approach to veterinary services. In addition, sponsored practices are subsidized for three years.

The beauty of each “incubation” process is this: communities now get a highly skilled veterinarian who is local, working hard to build a client roster of their own, and literally creating a self-sustaining marketplace for veterinary care. And greatest of all, Heal is behind them every step of the way!

The veterinary industry needs healing, too!

Without a doubt, veterinarians have some of the biggest hearts around. This is a career specifically chosen by people driven by love, compassion, and a desire to help others.

But the industry is shifting.

Studies reveal that veterinarians are now more stressed than ever before. Rates of anxiety and depression are high, student debt is paralyzing, and there is a severe lack of diversity (a consequence of which is an underrepresentation of the communities in which veterinarians serve).

Heal understands these struggles. That’s why we drastically cut down on the cost of a practice start-up. The more vets of all backgrounds and experiences who join us, the healthier our profession will be.

Learn more about helping HEAL bridge the gaps
[@healhousecall.com](https://healhousecall.com)

Why Dr. Danielle LaMarr went mobile

by Maya Sullivan

Georgia veterinarian, Dr. Danielle (Dani) LaMarr was ahead of this trend. She started Pet Fixer Mobile Veterinary Service in 1998. Although she started her career at the Atlanta Humane Society, she was soon inspired to take her medicine on the road, as a way of giving back to the community. One day while working at Atlanta Humane, she met Helen, an elderly lady who smuggled her cat Felix to the vet in her purse after the taxi driver told her, “No cats allowed.” Helen didn’t have a choice: she lived in a retirement community, she did not drive, but she desperately needed medical attention for her furry friend. Dr. Dani had an epiphany and realized her future was helping people like Helen, who otherwise had limited choices for vet care. From that point on, the art and compassion of house calls were born.



Pet Fixer Mobile Veterinary Service started out of Dr. Dani’s personal car with medical bag in tow. It grew into a small van with an examination table, to what is now a full-service hospital on wheels equipped with a surgical suite, X-ray machine, and practically all of the luxuries and capabilities of a freestanding veterinary hospital – except this one stands in your driveway!

Dr. Dani has not stopped her efforts to reach out to the community. The Pet Fixer Mobile Hospital is often seen at local schools teaching children about veterinary medicine and the infinite possibilities awaiting them in the future. Dr. Dani is an active member of the American Veterinary Medical Association, Tuskegee Veterinary Medical Alumnae Association, and a Diamond Life member of Delta Sigma Theta Sorority, Inc..

Recently, Dr. Dani has expanded Pet Fixer’s accessibility with the option of virtual vet visits, making veterinary care even more accessible.

Dr. Dani strives to provide top-quality veterinary medicine – both mobile and virtual– in an environment everyone is most comfortable- their own home!

“Taking cats into a clinic is not always easy, many people have multiple pets, and many pets just do better at home. No more cages, no more long waits, no more mess in the car. I come to you and care for your pets needs from nose to wagging tail!”

Three reasons why Dr. Dani loves being mobile

- 1.** Being able to help the community, especially elderly people who need our assistance.
- 2.** Seeing the environment that the pet lives in can help make a diagnosis and help with pet care recommendations.
- 3.** Being mobile means that I can help facilities that house multiple pets, like grooming and boarding facilities. The goal being able to do into the facility instead of having sick pets come into a clinic around healthy pets reduce the spread of an outbreak of a disease

You can follow Dr. Dani’s journey on social media at @thepet.fixer