

THIS JUST IN

## Smaller Brain Size Researchers find domestic cats have less cranial volume

A study published in the *Royal Society Open Science* found that domestic cats have smaller cranial volume, aka brain size, than their ancestors.

The researchers state that reduced brain size is a key characteristic of domesticated mammal species and is often cited as a key component of “domestication syndrome.” Sheep, dogs, and rabbits show the same results.

Note: Domestication syndrome was first proposed by Darwin, who noted heritable traits in domesticated animals that were not seen in wild ancestors. A 2014 paper in *Genetics* says domestication syndrome “has remained a conundrum for more than 140 years.”

In this study, the researchers repeated old studies that compared the brain sizes of wild cats, domestic cats, and hybrids. The data indicate that domestic cats do have smaller cranial volumes relative to both European wildcats and the wild ancestors of domestic cats, the African wildcats, verifying older studies.

They also found that hybrids of domestic cats and European wildcats have cranial volumes that cluster between the two species. These results are relevant to causes of domestication syndrome. ■

*Lesch, R., et al. “Cranial volume and palate length of cats, Felis spp., under domestication, hybridization and in wild populations.” Jan. 26, 2022. The Royal Society.*

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## Feline Arthritis Pain Control

*New medication is first one specifically for cats*

A new hope for pain control in cats became available when the Food and Drug Administration (FDA) approved Solensia (frunevetmab) as an injection for osteoarthritic pain in cats. This groundbreaking drug is the first medication approved for the control of arthritic pain in cats. It is also the first monoclonal antibody (mAB) that the FDA has approved for any animal species.

Osteoarthritis (OA) is common in cats, with over 40% of all cats showing some joint degeneration. While cats as young as 2 years old might be a bit arthritic, over 90% of all cats ages 12 years age show radiographic evidence of arthritic changes.

In cases of OA, the joint fluid and cartilage cushion that prevent bone-on-bone friction in healthy joints is reduced or damaged. That means pain, but detecting that pain can require careful observation, especially in cats. Many cats simply adjust their lifestyle, such as no longer leaping up to their usual window seat or playing with a favorite toy.

### Advancement Through Research

Cats are often shortchanged when it comes to pain medications due to their unique liver metabolism of many drugs.

Frunevetmab, the active ingredient in Solensia, is a cat-specific monoclonal antibody (a type of protein) designed to recognize and attach to a protein called nerve growth factor (NGF) that is involved in the regulation of pain in many species, including cats. When frunevetmab binds to NGF, it prevents the pain signal from reaching the brain.

Two clinical trials involving over 400 cats with OA-assessed responses to Solensia using behavioral surveys completed by their owners and examinations by veterinarians to characterize OA-related pain. The results showed that Solensia was safe and effective at decreasing OA-related pain in these cats. Vomiting was the most common side effect, with 13% of the cats in the trials showing mild vomiting post injection.



A common sign of arthritis is a decreased interest in playing.

### Signs of Arthritis:

- ▶ Your cat uses “stepping stones” to get down from a perch or avoids climbing all together
- ▶ He starts to react negatively to being touched, especially in the lower back region
- ▶ She avoids playing, even with the ultimate feather toy

### What You Should Do:

- ▶ If she's overweight, switch to a lower-calorie cat food
- ▶ Be sure food and water dishes and the litterbox are easy for your cat to access
- ▶ Consider adding Solensia and joint supplements

### Keep Your Cat Comfortable

The normal dosing protocol is one subcutaneous injection/month, which is going to be easier for many cat owners who dread having to pill their cats.

Certainly, owners should continue with other supportive care options, but adding Solensia can mean a better quality of life for their arthritic feline companions. ■

# The Role of Anti-Anxiety Meds

*You can help your stressed cat relax and be happy*

Everybody knows that stress and cats is not a good mix. Stressed, anxious cats are no fun. They often urinate and defecate around the house. They attack each other. They attack you. They hide for days at a time. They start pulling their own hair out, and they get sick. It behooves cat owners to do everything they can to manage their cat's anxiety.

The mainstays of stress management in cats are the avoidance of stressors (when possible), environmental management, behavior modification, and desensitization with guidance from your veterinarian. When these strategies fail, we look to medications.

"Cat owners should not be concerned about using anti-anxiety medication for their kitties when it is warranted," says Pamela Perry, DVM, PhD, lecturer in the Department of Clinical Sciences, Behavior Resident at Cornell University's College of Veterinary Medicine. "These medications have been studied and proven safe in cats. In addition, they help reduce the kitty's anxiety and allow the other treatment recommendations to be more effective. In the long run, anti-anxiety medication can improve a cat's quality of life."

## For Want of a Pill

Medicating stressed cats, though, can present a conundrum. If you've ever tried to give your cat a pill, you get it. It is not for the faint of heart, and it is stressful for all involved parties. So, while the medication may help, the medicating procedure itself most certainly will not, making this potentially a "two steps forward, one step back" situation.

There are a few ways around this. If pilling your cat is impossible, you can sometimes get them to eat the pill in food or a Greenies Pill Pocket. Most medications can now be formulated into flavored liquids or flavored chewables by compounding pharmacies.

You may have heard of transdermal medications for cats that are simply rubbed on the inside of the ear. This option is very appealing to cat owners, but beware! The systemic absorption and bioavailability of many medications administered this way is highly variable. For some medications, research shows it's downright poor.



*A stressed, anxious cat is an unhappy cat. Medication may be warranted.*

Another way to get around the medicating-cats conundrum is to exhaust all your other anti-anxiety options first:

**Feliway:** This product contains a compound that mimics the cat's natural feel-good pheromones that calm them and reduces anxiety. It is tested, tried, and true and can be very helpful in your home. It comes as a spray and a diffuser.

**Zylkene (Vetoquinol):** This supplement contains alpha-caseozepine (casein), a milk protein shown to promote relaxation and to relieve anxiety in cats. It comes in chewables or capsules that can be opened and fed in food.

**Rescue Remedy (by Bach; Nelson & Co):** This product contains five natural flower essences that relieve stress and promote calmness. It can be put in food or water, but it is less well absorbed in food.

**Prescription diets:** Royal Canin Calm (contains casein and l-tryptophan, an amino acid that helps with anxiety, sleeplessness, mood disorders) and Hill's Multi-Care Stress (contains casein)—resulted in improvement in some cases.

If your cat needs help with anxiety beyond these suggestions, it's time to talk with your veterinarian about medications.

## Medications

Anxiety meds for cats fall into two

main categories: short-acting drugs for situational anxiety and longer-term meds for ongoing daily stress.

The short-acting meds are mainly used for things like travel, veterinary visits, grooming appointments, boarding, and intermittent stressful home events like parties. Most of these will take effect within one to two hours and last four to 12 hours. The most common medications prescribed in this way are trazodone, gabapentin, and the benzodiazepines alprazolam, lorazepam, and clonazepam. It's always a good idea to test the prescribed dose prior to when you really need it to make sure it will have the desired effect. If it doesn't, talk to your veterinarian about adjusting the dose.

Important note: Diazepam (Valium), a well-known benzodiazepine, is typically not prescribed for cats as it has the potential to cause unpredictable severe liver necrosis (tissue death). Since there are plenty of other choices, it doesn't make sense to risk this life-threatening complication.

Medications prescribed for ongoing stress at home are typically either tricyclic antidepressants (TCAs) or selective serotonin reuptake inhibitors (SSRIs). These medications typically take four to six weeks to fully kick in. When they are no longer needed, they should always be tapered down, never discontinued abruptly.

The most commonly prescribed TCAs are clomipramine and amitriptyline. The most commonly prescribed SSRI in cats is fluoxetine (Prozac). Paroxetine and sertraline are alternative SSRIs.

For stress-induced aggression and urine spraying, buspirone (an azaperone) is sometimes prescribed.

None of these prescription medications are FDA-approved for use in cats. As such, their use in cats is considered extra-label or off-label. Extra-label means that the medication is being used in a way that is different from how it's been approved. While this may sound like a bad thing to you, it is an accepted, common practice in veterinary medicine.

## Bottom Line

We encourage you to try the non-medical suggestions mentioned above for your anxious cat. But, if all else fails, talk to your veterinarian about the pros and cons of medicating your cat. Sometimes it can be the difference between a stressed out, anxious pet and a happy, relaxed companion. ■

Dr. Walshlag, “so they are in the 130 to 150 mg/100kcal range, which is lowish, but we are often looking to get to the 90 to 110 mg/100 kcal range for phosphorus for cats with CKD.”

The source of phosphorus in the diet also may be important even for healthy cats. “Right now, there is a lot of interest in soluble phosphorus forms in diets,” says Dr. Wakshlag. “Typically, phosphorus comes from animal-based proteins, yet some manufacturers are using some phosphate salts in the diets, and these are very rapidly absorbed, unlike phosphorus from protein sources or things like bone meal.

“This rapidly absorbable form of phosphorus may not be ideal for cats,” he says. “Most manufacturers don’t use these since the higher protein cat foods will have plenty of phosphorus. But these soluble forms can be found in treats and certain foods on the market. It is probably good to avoid foods that label a source of phosphorus in the food that is coming from a chemical form until we know more about how this truly affects cats with kidney disease.”

**Sodium:** Salt increases blood pressure, which puts extra stress on the kidneys. Cats are most likely to encounter excess salt in treats. If your cat has kidney

### Tests for CKD

If your cat has symptoms of CKD, your veterinarian may recommend some of these tests to determine treatment:

#### Blood tests

- ▶ Blood urea nitrogen (BUN)
- ▶ Creatinine
- ▶ Electrolytes
- ▶ Red blood cell count
- ▶ SDMA
- ▶ Protein concentrations

#### Urinalysis:

- ▶ Concentration
- ▶ pH
- ▶ Protein concentration
- ▶ Presence of red blood cells
- ▶ Presence of other cells
- ▶ Urine culture for bacteria

#### Other tests:

- ▶ Abdominal ultrasound
- ▶ Radiographs (X-rays)
- ▶ Blood pressure

## It’s Not Always Easy to Switch to a Prescription Food

If your veterinarian recommends that you transition to a prescription diet, try to:

- ▶ Purchase the smallest bag or can possible, so you can see if your cat will eat the food (samples are rarely available)
- ▶ Make the switch gradually, just like you would with any other diet change
- ▶ Double check that any treats your cat eats adhere closely to the new dietary requirements
- ▶ Try warming the food slightly to increase the aroma

Recommended kidney diets include: Blue Veterinary Diet K+M, Hill’s Prescription Diet K/D, Purina Pro Plan NF, and Royal Canin Renal Support.

If your cat is in early-stage kidney failure—and the cost of prescription diets is an obstacle for you or your cat simply won’t eat them—talk with your veterinarian about recommended over-the-counter (OTC) options. Therapeutic diets that are restricted in protein, phosphorus, and sodium content and high in water-soluble vitamins, fiber, and antioxidant concentrations may prolong life and improve quality of life in cats with CKD. Prescription diets are backed by solid research and are considered the gold standard for prolonging quality life. However, veterinarians understand there are sometimes unavoidable individual limitations. Be honest with your veterinarian. We advise against going out and purchasing an OTC product without discussing nutritional needs with your veterinarian first.

disease, avoid cheese, deli meats, and some commercial cat treats. When choosing a treat from the pet store, check the salt content on the label. The Clinical Nutrition Service at Tufts University recommends a maximum of 1 mg sodium per calorie for pets with kidney disease.

#### Water-Soluble Vitamins and Minerals:

Because cats with CKD tend to urinate more, they can lose water-soluble vitamins and minerals in their urine. This can lead to deficiencies in things like B vitamins and potassium. B vitamins are usually included in prescription diets to help ensure your cat gets everything she needs, and there are potassium supplements available if needed.

**Fiber:** Soluble fiber helps keep the intestines functioning at their best. While this might not sound relevant to kidney disease at first, everything is connected. Soluble fiber helps to support normal gut bacteria, which helps with both metabolism and the immune system. It also helps to prevent and alleviate constipation, which can be a complication for cats with CKD, as they have a tendency to become dehydrated.

**Antioxidants:** Omega-3 fatty acids from fish oil have shown some promise to help support the kidneys, but more research is needed. It is often included in prescription kidney diets. And

your veterinarian may recommend supplementing additional omega-3s.

#### Prescription Food Options

Most veterinarians recommend a canned prescription kidney diet for cats with CKD and other kidney ailments. These diets have the ideal nutritional makeup for kidney health and include more moisture to help with hydration.

We all know that cats can be particular about what they will and won’t eat. Most prescription kidney diets come in several different flavors and textures. If your cat isn’t crazy about one brand, there are a couple others you can try. And, usually, you can ask about a refund for the prescription food that your cat didn’t like. While a canned food is the top choice, dry food diets are acceptable, too, for those cats that prefer kibble.

#### Bottom Line

If your cat has been diagnosed with CKD, prescription diets are important. While a cat in early kidney disease may OK with a more standard diet, a prescription diet with restricted phosphorus and restricted protein for cats with more advanced disease.

That said, dietary changes are most helpful when they start early, so it is important to catch CKD as quickly as possible. Regular bloodwork for senior cats is the best way to spot kidney damage before it becomes advanced. ■

# Cat Colors and Personalities

*It's fun, but the link is more anecdotal than scientific*

Ask any veterinary or shelter staff person and they will tell you, "Orange cats are sweet," and "Calicos and tortoiseshell cats are tough." These are anecdotal responses, but some studies support them.

A study at the University of California at Berkeley from 2012 queried 189 cat owners on cat behavior and personalities, and one at the University of California at Davis in 2015 evaluated 1,274 owner surveys on cat behaviors. In both studies, calicos and tortoiseshell cats rated as among the most aggressive, both at home and at veterinary visits. Orange cats, particularly males, tended to head the friendly lists.

It's important to understand that many factors contribute to a cat's individual personality. The old "nature vs. nurture" arguments come up right away. A kitten with a friendly sire and dam has a better chance of being a sweet cat than a kitten with very aggressive parents. At the same time, feral kittens who are socialized and raised with people often turn out to be quite friendly.

## No Cookie-Cutter Cats

"My experiences with my personal cats don't fit the studies," says Deb M. Eldredge DVM (Cornell 1980). "I have had two orange male barn cats. Firecracker was a total sweetie, but Ziggy remains the only animal I have had who viciously attacked me. My black female house cats (Jenny and Venus de Milo) were wonderful, and my tortoiseshell with a tuxedo, Samantha, was a dearly beloved companion for 22 years."

Among purebred cats, some breeds have been selected for sweetness and others for being clever. Think Persians or Ragdolls vs. Siamese. Longhaired cats in general have a reputation for being mellow or lazy, working as excellent "lap cats." Siamese and domestic shorthairs are known for being easy to train and for mastering complicated behaviors, not always to their owners' delight.

White cats tend to be classified as "aloof" in various surveys, but that trait may have a physical defect behind it. White cats, especially if they have blue eyes, have a high risk of deafness, which could make them seem to ignore you, but they really can't hear you.

Black cats often get a bad rap because of superstitions about black cats being evil, being a witch's familiar, or simply being associated with bad luck. Sadly, these old and unfounded superstitions lead to a low adoption rate for black cats, especially if they are solid black. In most behavior surveys, black cats rate somewhere in the middle with regard to perceptions of how favorable their personalities are.

Interestingly, bi-colored cats—gray, black, or tabby and white—got mixed reviews. Some studies put them right up there with calicos for aggressive behaviors while others rated them as usually "nice cats."

## In the Genes

Perhaps more important for general behavior characteristics than color is the sex of the cat involved. Since the X chromosome carries both the orange and black fur genes, female cats, who have two X chromosomes, can have both black and orange coat colors at the same time. Close to 100% of calicos and tortoiseshell-colored cats (black and orange in the same cat) are female. The rare males with this coloring tend to have an extra X chromosome, and most are sterile.

About 80% of all orange cats are male. In the one California study, orange females were considered to be right up there with calico for aggression.

Looking at coat colors this way, the sex of your kitten may be more important than his or her color with respect

to behavior. It's important to consider every factor.

## The Sweet Choice

How do you maximize the chances of a sweet feline companion? First, if possible, meet the parents. Often it is impossible to meet the sire of a litter unless it is from a purebred breeder, but for most litters, the dam is available. Is she friendly? If she approaches you in a positive way, she is likely to be "genetically friendly" and she is influencing her kittens with her behavior.

A litter raised in a house with lots of appropriate human contact will tend to be friendlier than a litter raised under the porch of an abandoned house. Important socialization takes place from 3 to 9 weeks of age for kittens. During this time, frequent, gentle handling by a variety of people increases the likelihood that a kitten will grow into a friendly cat. Ideally, kittens should be with their mother until at least 8 to 10 weeks of age.

Do consider sex of your future feline companion. Female cats are known for being great hunters (again, anecdotal, but ask any farmer about their barn cats and they will often tell you that females are the best hunters). Their hunting behavior may carry over to being more aggressive in play and in interactions with their owners.

If mellow is your ideal, consider a longhaired orange male.

The bottom line, however, is that cat personalities vary greatly depending on genetics and socialization more so than coat color or length. The perfect feline companion for your family may be any color, any sex, and any coat length. Take the time to find the ideal cat for you. ■



*Guessing personality by color is possible, but other genetics and environment are factors, too.*