

### Dear Clients & Friends...

I am writing this during the first week of December. By the time you receive it, it will be mid-January and winter will be half over. I think we will all be happy to see this one go. I hope all of you will have made it through the holidays without getting sick and that some of you will already have gotten a first COVID vaccination.

I have read that only 40% of people surveyed said they would get the vaccine once it became available. I hope that turns out not to be true and all of you will get it. A great deal more than 40% of the population needs to have immunity in order to keep a community safe. Most of you bring your pets in for vaccination – take the same care for yourselves and your human loved ones.

Vaccines are amazing. We sometimes forget how deadly diseases such as rabies, distemper and parvovirus are. Many illnesses of pets are carried by wildlife

or stray cats, but because most of the pet dog and cat We want all of population is protected, the you to have a safe, occasional unvaccinated healthy 2021! individuals rarely contract these infections. Worldwide, rabies still kills 56,000 people every year, yet the US only accounts for a handful of them. It also amazes me that coronavirus vaccines were developed so quickly. Feline infectious peritonitis, FIP, is a coronavirus, and despite many years of work, an effective

vaccine against it has yet

to be developed. We do

have a new antiviral medication

for FIP and a patient who has survived this disease – which until now has been 100% fatal. It required

this disease – which until now has been 100% fatal. It required painful daily injections for 84 days. How I wish Oliver had been able to be vaccinated rather than go through the torture of

## A Tidbit...

Children whose mother owned a dog during pregnancy had lower biomarkers of allergy and inflammation than children with no prenatal pet exposure, physician Jasmine Alsukhon reported at the American College of Allergy, Asthma & Immunology's virtual meeting. Immunoglobulin E trajectory from age 10 to 14 years old was 28.8% lower in children with prenatal pet exposure than in those whose mother had no pets. The effect was significant for ownership of dogs, not cats.

this regimen. Viruses do not respond to medications like bacterial and fungal infections do. The best strategy is always to vaccinate if possible.

Bacteria are different – we have a lot more medications to kill the organisms, but developing vaccinations can be difficult and less effective. Immunity from vaccinations for viral diseases can last for many years. Vaccines for bacterial diseases, such as Lyme

disease, Bordetella (kennel cough) and Leptospirosis, tend to wear off much more quickly. In dogs, this means annual boosters for some vaccines but every three years for others.

I find it interesting, too, that infections and vaccinations can differ greatly between species. We have had safe, effective vaccines for Lyme disease in dogs for many years, but Lyme vaccines for humans have been poor at best. Similarly, we have been able to vaccinate cats for feline leukemia and FIV, both similar to HIV/AIDS, for years. Yet we are still awaiting effective vaccines for HIV in humans. Coronavirus seems to have gone the other way.

Viruses like influenza mutate so quickly that a new vaccine is needed every year, but the vaccine you received last year or the year before would likely still protect you against the strain of virus that was prevalent then.

All in all, there are many challenges to vaccine development, and we are fortunate that in the case of COVID-19 we have a chance to protect ourselves and our loved ones. Grab onto it with both hands – we want all of you to have a safe, healthy 2021!

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## PERIODONTAL FAQS

Every year we have an article about dental care in our winter newsletter. This is mainly because February is National Pet Dental

Health Month and we always have dental promotions (see coupons Page 3) during that month. The other reason is that periodontal disease, or POD, is the most common disease of pets, affecting over 80% of dogs and cats by age three.

Despite how common it is, most pet owners don't have a good understanding of what to expect when their pet has periodontal disease. It is often shocking to people when we tell them we need to extract some of their pet's teeth. Tooth loss is the inevitable consequence of POD.

Between POD, broken or abscessed teeth and tooth resorption, we end up extracting teeth on the vast majority of dental cleanings we do. Clients are often horrified to learn their pets



These teeth have heavy tartar and gum recession

need teeth removed. Modern human dental care has made extractions rare for us but for pets, they are commonplace.

POD is a relentless and progressive disease, starting with plaque build-up, then tartar accumulation (tartar is hardened, mineralized plaque),

progressing to gum infection, and eventually infecting the bone and ligaments surrounding the tooth roots.

For some lucky pets, regular and timely dental care to remove plaque and tartar from the teeth keeps infection limited to the crowns of the teeth and will prevent progression of disease.



This pet has very mild tartar build-up but the gums are already infected, as evidenced by the thin, red line where the gum meets the tooth. This dog already needs its teeth cleaned.

Many pets are not so lucky. The following are the most common questions we get about POD and extracting teeth.

# What is periodontal disease, and how is it different from tartar?

Dental tartar consists of a mineral matrix containing millions of bacteria. 80% of tartar is actually living organisms. The rest is mineral deposits. As soon as tartar starts pressing against or undermining the gum tissue, bacteria are no longer limited to the dental enamel. They begin to damage the tissue around the teeth and the attachments between teeth, bone and gum tissue. "Peri" means around, so

periodontal disease is disease around the teeth.

The bacteria also infect the rest of the body. Bacteria end up in the bloodstream every time your pet eats and chews. This circulating bacterial load trickles out from the bloodstream into tissues, where the immune system tries to eliminate it, forming millions of microscopic abscesses. The primary organs to be affected by this onslaught are the heart valves, liver, kidneys, lungs and joints.

Bone loss and periodontal ligament destruction cause affected teeth to become loose and eventually fall out. Once 50% or more of the bone surrounding a tooth root is lost the tooth cannot be saved. We can either extract it, which removes the infection and eliminates the pain the pet is feeling, or we can wait for it to fall out on its own. It is far more kind and safe to extract the tooth!

Pets with POD that is not promptly treated have a 1-3 year shorter life expectancy than pets with healthy teeth and gums. Periodontal disease is deadly – slowly. Most pet owners don't think of dental care as being life-saving but that's exactly what it is. By having your pet's teeth cleaned and any infected teeth extracted, you are saving his or her life.

#### Why did my pet get this?

It's not because you did anything wrong! The tendency to develop dental tartar and then periodontal disease is inherited. Various factors in saliva encourage or discourage plaque and tartar build-up. The hardness and thickness of the enamel on the teeth matters, too. The health and functioning of the immune system and age are also factors and so is age. The more pitted and worn the enamel gets from wear and tear over the years the faster plaque and tartar accumulate.

POD is also related to the pet's size. The smaller the pet, the more quickly tartar develops. All the toy breeds are very prone to POD – Yorkshire terriers, Maltese, toy and miniature poodles and Chihuahuas are especially at risk. Miniature schnauzers, Shetland sheepdogs, Brittany spaniels and greyhounds are also especially prone. As a general rule, periodontal disease tends to be slower to develop in large dogs, though it usually gets there eventually.

In cats, periodontal disease is common as well, with brachycephalic breeds such as Persians and Himalayans being more affected than the general cat population. Crowded or misaligned teeth in both cats and dogs increases risk.

## What can I do to prevent extractions from being needed again?

The more home care you do, the better the health of the teeth will be. Brushing the little back molars is difficult in a tiny pet, however, and we can't brush the tongue side of the teeth. Brushing after every meal is tough for most people, too. Daily is usually about as much as most people can manage. Brushing less

often than twice a week won't get you any measurable benefit. Even if a pet owner is willing, some pets won't allow brushing. Luckily, there are alternatives.

What you feed your dog can make a big difference. Feeding a tartar control diet can reduce plaque and tarter build-up by 1/3 to 1/2. Tarter control treats, such as Greenies and



Veggiedent chews, reduce plaque by 10-15%. We also have a water additive that reduces plaque bacteria. All of these can be part of your home dental care program.

The more frequently

the teeth are cleaned here at the hospital, ideally at the first sign of tartar build-up and gingivitis, the better. People usually have their teeth cleaned twice a year. Many pets need frequent cleanings, too.

Most pet owners do not check their pets' teeth and gums regularly, and most pets do not get their teeth cleaned often enough. We only examine most of our patients once a year and tartar can build up quickly. By the time we check your pet's



These upper incisor teeth show receded gums with tarter packed around the roots. These teeth probably cannot be saved.

teeth and schedule a cleaning, disease may already be advanced. Most of our clients worry about anesthesia, which is always needed for proper dental care in pets, so they put it off longer than they should. It's also costly to provide enough dental cleanings to keep a small pet's

teeth from getting bad. Some tiny dogs really ought to have their teeth cleaned every 3-4 months, and this is a lot to ask of people.

Even with the very best effort, it is a rare dog weighing under 10 lb or of a susceptible breed to still retain all its teeth by age ten. Once we have to extract a few teeth, we are likely to have to extract more in the future, even with the best home care in the world. The bottom line is it is difficult to completely stop the progress of POD, no matter how good a job you do or we do.

This doesn't mean it's hopeless. In fact, all the things we do to reduce POD are what improves quality of life and life expectancy. It simply means that you should have realistic expectations for the future

#### Are there alternatives to extraction?

If there is bone loss around a tooth root but it has not yet reached the critical 50% amount, sometimes we can save a tooth by injecting an antibiotic gel into the pocket between the tooth

root and the bone and gum that surround it. The pocket has to be deep enough to hold the gel in place. If the gum has receded this won't be possible. A pet owner must be willing to do home care after the dental procedure for this to be effective. If an owner is unwilling or unable to provide this aftercare, it is better to extract the tooth.

Root canals can be done for abscessed teeth but do not help with periodontal disease.

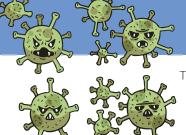
## How will my pet eat after all these extractions?

He or she will actually eat more comfortably without those infected teeth. People with periodontal disease say that eating is kind of like walking on a sprained ankle – you can do it, but it sure hurts. Once the infection is gone and the gums have healed your pet will probably be perfectly comfortable eating dry pet food again, even if many teeth are missing.

The most commonly extracted teeth are the smallest ones – the front incisors, the tiny back molars and the first premolar teeth. These are not major chewing teeth. Only eight out of the 42 teeth dogs possess are of major importance. Most of the time, pets are eating normally again within a few days of their extractions. Many times he or she obviously feels much better. Pet owners are often surprised to see their dog behaving "like a puppy" again. Dogs and cats are very good at hiding pain from us. Most people don't realize how much the teeth were hurting until they see how much better their pet feels afterwards.

Be proactive, and have your pet's teeth cleaned early and often. The more aware you are that periodontal disease is likely, either now or in the future, the better job you can do in helping us to prevent as many extractions as we can. **Without healthy teeth, your pet isn't healthy.** 





The pandemic has caused changes in the lives of pets as well as for their humans. There have been many articles in our veterinary journals about different aspects of the situation.

Psychologist Lori Kogan, a professor of veterinary medicine at Colorado State University and chair of the Human-Animal Interaction Section of the American Psychological Association, has been cataloging stories about pets and people during the coronavirus pandemic. She and her team carried out

surveys of current Pets have played pet owners a critical role in helping reduce feelings of depression, anxiety, isolation and loneliness.

media— one regarding cats and another asking about dogs. The surveys asked participants to share their thoughts, experiences and concerns amid the pandemic.

two anonymous online

via social

They found a significant number of people reported feeling they have less social support from friends and family now than before COVID-19 spread across the U.S. For many, their pets have played a critical role in helping reduce feelings of depression, anxiety, isolation and loneliness in these tough months.

Pets, Kogan says, are "a respite from the difficulties of life." While relationships with friends and family can be fraught, she says, "Relationships

with animals are simple."

Dr. Gregory Brown is a psychiatrist in Austin, Texas, and a spokesperson for the American Psychiatric Association. Brown says he has been seeing an increase in anxiety, insomnia and depression among patients he has counseled in the past six months. "People are definitely dealing with economic stressors, a hard time with money, and with just being idle."

A dog "nudging at your foot or barking because they want to go for a walk" can be a real motivator every day to get out and get moving, he says. And that's good emotionally as well as physically. "We know physical activity can help reduce depression."

All pets can help people overcome numerous emotional and physical challenges, Muller says. And certainly during the global pandemic, when people are feeling locked down, isolated and lacking in human connection, pets can make a world of difference.

Just playing with or petting a pet for five minutes can reduce blood pressure and increase hormones associated with contentment. Oxytocin, sometimes called the "bonding hormone" or "cuddle hormone," is often released with a gentle touch. And it's not just humans who benefit from increased

oxytocin levels — dogs do too.

When you develop a bond with an animal companion, Muller says, you often get someone who "loves you unconditionally, who is there for you 24 hours a day, who doesn't mind how you look today," she says. "They are just there to love you and this brings a tremendous benefit for the entire family."

A lot of us have been home for the last nine months — just about every day, all day. Sleeping, eating, learning and working at home. If you've got a lovable furry creature or creatures at home, having you around so much might be something close to heaven for them.

For many pets, however, adjusting to our new lifestyles can also be stressful. Clients report more problems with barking in their dogs, especially because it's getting in the way of people being able to do their work. The dogs may not be barking more than they have in the past but people are with their barking dogs more. Another factor is an increase in

territorial barking. Less shopping in stores and more shopping online leads to more delivery trucks and door bells ringing.

Attention-seeking behaviors can also be disrupting. It's not a big deal if your dog is barking at you to go for a walk or your cat is lying on your computer keyboard when you are not working. When you are trying to attend a Zoom meeting or get a report

done on time, those same behaviors can be disruptive and frustrating.

To overcome these problem behaviors may require some creativity. Give them something to do, such as a food puzzle toy or something to chew, and make sure they've had plenty of exercise — especially if they're missing out on their usual time at a dog park or at a day care.



# ETS

Easier said than done, but you should also ignore the unwanted behavior. Ignoring can be really hard if you're in the middle of a meeting. You can't just say "I have to let my dog bark until he stops." Make sure that you get your dog set up with something really enjoyable to do while you're on that Zoom call.

With cats, try to strike a compromise. If your cat wants to be close to you, put a nice comfy place right next to the computer. Reinforce your cat's desire to be there with some treats, a reward for lying down in the place where you do want him or her to lay and not in the place you don't. Again, make sure to provide plenty of exercise and plenty of playtime. A happy, relaxed and less troublesome pet is one who is tired out. Some cats enjoy puzzle toys, just like dogs do. Set up a bird feeder outside a window to provide an alternative activity, or purchase an automated toy you can turn on just before your meeting starts.

It's critical to try to be consistent with your pets. If you sometimes pet your dog when he interrupts your meeting with barking but other times you yell at him, he will have no idea what he is doing wrong. If it's OK and cute if your cat lies on the keyboard sometimes, but not other times, that's confusing. Predictability is important to pets. When we change the rules because of working from home, it causes anxiety and confusion.

Many more people have been adopting or purchasing pets during the pandemic. People have more time to train or enjoy pets when they are home more. The average number of new pets per veterinary practice rose from 23 per week in March to 36 in August – an increase of more than 50%.

One of the concerns that animal behaviorists, veterinarians, rescue organizations and shelters have about

Livestock vaccine maker Medgene Labs is developing a SARS-CoV-2 vaccine for pet cats and ferrets, and possibly for farmed mink. Studies have shown that all three species are susceptible to the virus, and while it's possible people can transmit the virus to pet cats, studies have not confirmed cats can transmit it to people.

buyer's regret. A few months from now, will many of those same animals end up surrendered to shelters? What's going to happen when their people suddenly go back to work full time?

A dog that

COVID-19 is rescuer's or

spends no time alone is at high risk

for developing separation anxiety later. We've always seen this to some extent, such as when families adopt a dog or puppy at the beginning of summer, when they can be home with it. Then, when the kids go back to school, suddenly nobody is home and the dog becomes anxious and stressed. Right now, we have

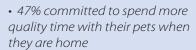
people home for months and months. What will happen to those millions of pets when the pandemic is over?

On the other hand, being home with our pets gives us a much deeper understanding of the importance of social connection and mental stimulation for our pets.

A survey of 1000 dog and cat owners done last June by Banfield Pet Hospital showed that staying at home more put the majority of pet owners, 84% of them, more in touch with their pets.

- 67% report planning to change how they care for their pets going forward.
- 44% said they feel more responsible and attentive toward their dog or cat.
- 37% are paying more attention to their pet's personal care, such as dental health.
- 41% said they contacted their veterinarian during the shutdown last spring and 20% are committed to taking their pet to the veterinarian for wellness care more often.

The survey results also noted that 65% of pet owners said they were showing their pets increased affection, while more than a third reported their pets to be happier and more playful. 47% said they were talking to their pets more. 59%, however, were worried that their dog or cat may suffer from separation anxiety once the owner resumes a typical work schedule. To address this issue:



- 21% plan to adjust their schedules to be at home with their pets more often
- 10% intent to adopt another pet to keep their dog or cat company

The human-animal bond seems to have been strengthened during this past year.

- 45% of pet owners said their household happiness has increased while spending more time with their pet during quarantine
- 39% said their pet helped lower their anxiety and uncertainty caused by the pandemic
- 47% of millennials, 43% of Gen Z and 43% of Gen X pet owners found increased support from their pets

For the most part, 2020 may have been a bad year for us humans. For our pets, though, it may have been the best year ever! We hope these good feelings and concern for our animal friends will continue well beyond the coronavirus pandemic.



# FDA Approves First Intratumoral Injection to Treat Non-Metastatic Mast Cell Tumors in Dogs

The U.S. Food and Drug Administration approved Stelfonta (tigilanol tiglate injection) in November, to treat dogs with mast cell tumors (MCTs). Stelfonta is specifically for non-metastatic MCTs located within the skin (intradermal) or under the skin (subcutaneous), in particular areas of the legs. It will also be useful for dogs with higher risk for anesthesia. Stelfonta is injected directly into the MCT (an intratumoral injection). It works by activating a protein that spreads throughout the treated tumor and disintegrates tumor cells.

MCTs are the most common malignant (cancerous) skin tumor in dogs, and usually form a lump on or under the skin. Full surgical removal of mast cell tumors can be difficult when tumors are located in certain areas, such as the leg. When mast cell tumors are not fully removed, the remaining malignant cells can start to grow and spread rapidly. This approval provides an additional treatment option to help treat local mast cell tumors on or under the skin in dogs.

The label for Stelfonta carries a boxed warning for human safety because of the risk of severe wound formation from accidental self-injection or needle stick injuries. The boxed warning also includes several statements regarding the safe

use of Stelfonta in dogs, including: Stelfonta should always be given with a corticosteroid, an H1 receptor blocking agent and an H2 receptor blocking agent, to decrease the risk of severe systemic adverse reactions, including death, from mast cell degranulation. Veterinarians should provide the client information sheet to pet owners for important information about Stelfonta and how to care for their pets after they have been given the drug.

The safety and effectiveness of Stelfonta was established in a study of 118 dogs with a measurable cutaneous or a subcutaneous MCT on the lower leg. Eighty of those dogs were treated with Stelfonta and 38 were in an untreated control group. The dogs were followed and tumor response was assessed almost a month after their first injection. The complete remission rate after treatment was 75%. Eighteen dogs in the group treated with Stelfonta that didn't have their treated tumor completely disappear were retreated a second time about a month after the first treatment, and approximately a month after receiving their second treatment, 44% of these dogs had their tumor disappear completely.

This new injection will be a great thing to add to our cancer-fighting toolbox!



## New Hope for Tooth Resorption INI (ΔΤς

Research by The University of Edinburgh Royal (Dick) School of Veterinary Studies has shown that blocking the action of a particular gene, called MMP9, prevents



the cell processes that lead to tooth resorption. The findings could aid in development of therapies for this painful condition, for which no treatments exist other than extracting affected teeth.

Tooth resorption affects the majority of cats, causing chronic pain and loss of teeth. Findings suggest the MMP9 gene, and the protein it

generates, are involved in causing this condition. It is thought that existing therapies targeting this protein in cancer treatment may be effective in treating tooth resorption as well. We will keep our fingers crossed. This is a condition we see daily in our feline patients.



# IMPROVING THE ODDS OF SURVIVING LYMPHOMA

A recent clinical trial looked at whether combining immunotherapy with low doses of chemotherapy can improve outcomes and quality of life for dogs with Type B lymphoma—and, someday, people, too. Immunotherapy uses customized molecules from the cancer to teach the immune system to target cancer cells. They work in a way similar to vaccines, except instead of targeting a virus or bacteria they target cancer cells.

One of the most common cancers in dogs, lymphoma is a cancer of white blood cells called lymphocytes that normally help protect against infection. In B-cell lymphoma, abnormal lymphocyte cells accumulate in the lymph nodes and other organs that are part of the immune system, such as the spleen. The lymph nodes quickly become enlarged. In most dogs, many lymph nodes are involved across the body. These are often noticed by the pet owner as lumps or may be found during a routine veterinary examination.

In general, dogs with lymphoma tend to survive a very short period of time without treatment—only around two to three months. Lymphoma is a type of cancer that usually responds well to chemotherapy. However, the standard chemotherapy treatment regimen—CHOP, an acronym for 4 different drugs that are used—can extend that survival time for most dogs to about 10 to 14 months.

The combination of immunotherapy and chemotherapy offers an encouraging new treatment option. Immunotherapy alone was not successful. However, combining immunotherapy with a low dose of doxorubicin, a chemotherapy agent that when used alone extends median survival time in dogs with B cell lymphoma by about six months, worked well.

Although the number of patients treated was small, the results were very encouraging. Some patients, about 10-15%, had no response and dropped out of the trial. The remainder of dogs treated seemed to be long-term survivors. Some dogs in the trial are now 300 to 600 days post diagnosis. Among the dogs that responded to the therapy

## More Tidbits...

- Kansas State University says research is making progress on the development of vaccines against Ehrlichia and Anaplasma infections, both tick-borne diseases seen frequently in Wisconsin. Infection with Ehrlichia, called ehrlichiosis, can lead to life-threatening illness. It is especially deadly if combined with Lyme disease or Anaplasmosis infection. Before the KSU team's efforts, the only option for treatment of Ehrlichia and Anaplasma in humans and dogs was antibiotics.
- President-elect Joe Biden and his wife, Jill, will be bringing their German shepherds with them to the White House. Champ lived with the Bidens at the Naval Observatory when Biden was vice president, and they adopted Major as a puppy from the Delaware Humane Society in 2018.
- Counterfeit Zymox products were recently sold on Amazon. Manufacturer Pet King Brands was able to detect the counterfeit products through its quality and safety enforcement program, officials

said. As a general rule, it's best to be wary of purchasing any medications through online sellers or at big box stores. Counterfeit heartworm, flea and tick preventives are the most common but many other fake products have been identified by the FDA or manufacturers.



but later saw their cancer return, most quickly went back into remission when re-treated with another low dose of chemotherapy.

Unlike the typical CHOP treatment regimen—which entails weekly visits for chemotherapy administration, often in the setting of a specialty hospital—the experimental regimen uses far less injectable chemo in combination with oral medications given at home. This potentially means that more pet owners could have access to treatment in the future.

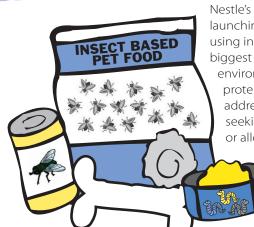
The clinical trial—which was funded by part of a five-year, \$2.5 million grant from the National Cancer Institute of the National Institutes of Health, through the Cancer Moonshot initiative—ultimately seeks to inform better therapies for people with cancer. By doing the study in dogs whose owners have voluntarily chosen an experimental way to fight lymphoma, veterinary researchers may reveal a better approach than currently used in people.

The dogs in the clinical trial at Cummings School may provide more evidence of the value of combining chemotherapy with immunotherapy to improve not just treatment outcomes, but also quality of life for cancer survivors. Long-term cancer survivorship often comes with a whole host of other issues in human patients, including risk of heart disease, neuropathy, and cognitive dysfunction.

Pet owners can learn more about the canine lymphoma clinical trial at Cummings School's Clinical Trials Office website.



# Nestle uses INSECT PROTEIN in Purina Pet Food



Nestle's Purina brand is launching a line of pet food using insects, as the world's biggest food group tests more environmentally sustainable protein sources. The move addresses a trend of people seeking more eco-friendly or allergen-free diets for

their pets. "We see increasing demand for diversified sources of proteins for

pet food products," Bernard Meunier, head of Purina in Europe,

told Reuters in an interview. He said limited planetary resources and decreasing meat consumption in Europe were incentives to explore new proteins.

The Purina Beyond Nature's Protein line, which has already launched in Switzerland, will be available in two variations - one using chicken, fava beans and protein from black soldier fly



larvae, and one using chicken, pig's liver and millet. Both will be available for dogs and cats at Swiss retailer Coop, which also sells insect-based snacks and burgers for human consumption. Rollouts in more markets are planned starting next year, Meunier said.

He said the COVID-19 pandemic had strengthened the bond between people and their pets, pushing up demand for high-quality pet food and leading to market share gains for Purina. In a blog post last year, the British Veterinary Association endorsed insect-based pet food, recommending it to owners who wanted a "livestock-free" diet for their pets. One leading supplier of insect protein in Europe is the Dutch company Protix, founded in 2009, which sells ingredients made from the black soldier fly, mealworms, crickets and locusts.

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