



WINN FELINE FOUNDATION

For the Health and Well-being of All Cats

637 Wyckoff Ave., Suite 336, Wyckoff, NJ 07481 • www.winnfelinefoundation.org
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38th Annual Winn Symposium – June 30, 2016

“Cat Tales” of Genetics and Behavior

Transcript of Audio: Introduction, Dr. Nicholas Dodman and OCD Disorders of Cats, Q &A

Introduction for Dr. Dodman

Dr. Glenn Olah:

I'd like to introduce the Winn board members in the audience. Just to introduce the board members, there are actually 11 board members. I think we should have nine of them here today. Over here we have Dr. Brian Holub, Janet, our new board member here, Dean, Vickie Fisher in the back, Drew in the very back, waving. Oh no, that's Lorraine, I'm sorry. I don't have my glasses on! And Susan is somewhere I think. I already got Drew in the very back, Vicki our Executive Director over here as well, next to her husband, Bob. If I forgot anybody, my apologies. Alright.

I'd like to introduce our next speaker, Dr. Dodman. Dr. Nicholas H. Dodman is one of the world's most noted and celebrated veterinary behaviorists. He grew up in England and trained to be a vet in Scotland and, at the age of 26, became the youngest veterinary faculty member in Britain. Dr. Dodman immigrated to the United States in 1981 and became a faculty member at Tufts University School of Medicine. At Tufts, he became interested in behavioral pharmacology and the field of animal behavior and, eventually, founded the Animal Behavior Clinic - one of the first of its kind – at Tufts in 1986. He's a diplomat in veterinary anesthesia from the Royal College of Veterinary Surgeons, board certified by the American College of Veterinary Anesthesiologists and the American College of Veterinary Behaviorists. He devotes his time to his specialty practice of animal behavior. He has also written various bestseller books regarding animal behaviors as well as two textbooks and more than 100 articles and contributions to scientific books and journals.

Today Dr. Dodman will provide information on the common presentations of three compulsive behaviors in cats: Wool sucking, psychogenic alopecia, and feline hyperesthesia syndrome. Regarding a phenotypic study of wool sucking funded by Winn, he will list potential causes and preventive measures that can be taken to reduce the occurrence of this troubling and occasionally lethal condition. Also, he will discuss findings of a Winn-funded study to locate atypical genomic regions in the Birman cats affected with this condition.

Dr. Nicholas Dodman:

First of all, let me say it's a very special day today. You have me on, probably, one of the most unusual days of my entire life. This is, actually, I've retired! Half an hour ago so this is me kicking my feet up, hanging out.

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Unlike Dr. Lyons, who is just a young whippersnapper in her 50's, I happen to have already crossed the 70 threshold, and I'm pushing 71 in a little while, so it's been a wild ride. Forty-six years in veterinary medicine, thirty-five years at Tufts, but it ain't over yet, because Dr. Lyons and I are continuing to do the study that Winn has helped us with on the genetics of the cat, and we've got a number of other genetic projects and other projects and things I'm interested in. We're going to talk about Sonic Hedgehog and the dwarf syndrome. Unlike Leslie, who is a geneticist par excellence, my knowledge of genetics is kind of ropey, because when I went to veterinary school, they didn't really know, I mean, it was shortly after Watson and Crick, I think. I mean, it was just a few years ago when I thought a genome was a small person who worked in the French underground, but then I remembered that was a metronome. I thought a triple repeat was something that happened after eight gherkins. I thought a Manhattan plot was some evil scheme hatched up by terrorists in midtown New York. I thought multidimensional scaling was coming at mountains from different sides with crampons on, but I've learned differently, but still, my knowledge is a little bit creaky, but my geneticist friends keep me straight. The fact is that, if you're going to do these studies, which I'm going to get to eventually, you need two parts, as Leslie alluded to, and that's why she likes to work at the veterinary school, where people could do the phenotyping, which is the actual look of the behavior, and how it actually presents. It isn't accurate. The genetics isn't worth a hoot. Then, at the other end, you've got the geneticists. So people like Leslie and myself, other colleagues, Dr. Gins myself, Dr. Ostrand and myself, work together like dumbbells, except we are smart. Two ends of the same block, and the phenotype has to be good on the genotype; the genotype has to be good with the statistics, and so on. So, that's my admission.

It's also a tricky time. Everything's happening at once in my life, because as I'm retiring into something else, I'm morphing for about fourth different time. All the other stuff, like jumbling and I just had to let it go. I want to work more independently, on my own clock, doing my own things, and maybe have a little bit more free time but, because of the retirement, I'm also selling my house, buying a house, had my 27th wedding anniversary a few days ago, daughter just graduated from UPenn Medical School. It is just all happening. I haven't been as busy in – and here we are.

This is an unashamed advert for my next book. My first book was 1997, was *The Cat Who Cried For Help*, and that got me onto *Good Morning America* and a few big TV shows. This is one that comes out next month, but you'll see, what it actually is is, Dr. Lyons pretty much went over through the beginning to the end, from the soup to the nuts the things that she's found or discovered, all the wonderful things, the genes and the publications over the many years. Over my years as a behaviorist, which is really, the first part was anesthesiology, but around 1990 I switched into full-time behavior and, since then, we've found all kinds of interesting things, and it's in dogs and cats and horses and parrots and all creatures, great and small, so I'm just going to say it's more eclectic. Leslie is much more focused on cats, and I'm sort of all over the place – I'm a jack of all trades and master of some.

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So, the top title, which you can't read, says Neurotic Dogs, Compulsive Kittens, Anxious Birds: The New Science Of Animal Psychiatry. That was an early rendition of a mocked-up cover. They said, "It cannot be the new science of psychology," you know, Pavlov would roll over in his grave! Actually, it's really more like psychiatry, and there are the Labrador and the parrot and, actually, the cat is represented by the tail underneath the couch.

One of my interests over the years has been, really, psychiatric conditions that manifest in animals. They're human psychiatric conditions and, as Leslie said about the genome, we're actually all on this planet, we're all mammals together, and we have a lot of DNA, just different switching and so, to me, it is not a human world surrounded, like the sun, surrounded by myriads of little tiny stars and planets; we're actually all in this together, and I don't find it surprising at all that animals have thoughts and emotions that are very similar to ours, that sometimes they can be disturbed, sometimes because of bad experiences, sometimes because of genetics that incline them to tricky behaviors, so OCD became a focus, because that's how I first got into behavior, with an epic experiments in horses where, as an anesthesiologist, I was looking at the effect of morphine in horses, and we discovered that we actually created a compulsive disorder in the horse by giving, just temporary, while the morphine lasted. I'm doing my research on morphine because I wanted to kill the pain after surgery, but horses are unusual, they get excited. We were studying why they got excited, and there we go and create these so called stall vices, like cribbing and weaving and digging and circling. How could we do that without medicine, when horses in the field and in the stable, they do it anyway? What if, was the thought, that nature's own morphine-like substances, the endorphins, were somehow involved. In that case, if you take a drug like Narcan, which they use to reverse opioid addiction in addicts that are in overdose, we could give it to a horse, it will stop. What a great idea! And we did, and they did stop, in their tracks. It was such an amazing moment, one of those moments you hope for all your life, and I was working with a Professor Shuster, who was the medical school pharmacologist, that he changed his whole career, from being studying drugs of addiction, to studying behaviors of addiction. The lady who owned the horse, she changed from being a highly-paid executive at a company in Boston, went back to university, did a PhD in biochemistry, and I changed from being an anesthesiologist to being a behaviorist. So, having studied horses, which I've done over and over again, and come up with lots of new treatments for OCD, some of which has translated into the human realm, too; we have papers and patents out on that. We also then studied dogs with acral lick, and then I thought, what would cats have that would count as a feline compulsive disorder? A couple of things sprung to mind: The wool-sucking pica, which I'll talk about first; psychogenic alopecia, which is a dead ringer for human trichotillomania, which is compulsive hair pulling. You know, I'm so freaked out I'm pulling my hair out, that some people do it all the time; and feline hyperesthesia, you'll see maybe is or maybe isn't a compulsive disorder, and I'm intending to think that it isn't.

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This is the cycle of OCD. This is the OCD help page on your web for humans, so this is the so-called cycle. So, you can break into the cycle any way you want to, but let's say we've come in with anxiety. If you are an animal, whether it's a person or a cat or a dog or a parrot or some other species, if you're genetically programmed, if you have the genetic inclination – not everyone does - your anxiety can lead you into a bizarre, repetitive disorder, which results in a manifestation of some natural behavior that's just expressed over and over again. Really, the mechanism has kind of gone awry; you cannot turn it off. The anxiety caused you to do this thing repetitively. In humans it would be, say, hand washing because you're concerned about germs is a classical one, and after you've washed your hands, it brings about relief, but after relief, you start to think about it again, you know, "but what if I didn't get completely clean?" so you then start to become anxious, and so then you get into the compulsion again, and that's the cycle, it goes around and around. The same thing with animals. The purists would say you can't say that an animal has obsessive compulsive disorder, because you can't prove they obsess, and no, you can't. We can't access animals' thoughts, yet. I mean, the stuff going on with imaging studies, where you can sort of almost see them thinking - you train them to lie still in an MRI unit – but, really, you don't know, but I can tell you, from an interpretive side, which real scientists don't do, but I do, they look for all the world like they're obsessing. They look like that thought is constantly recurring. Can animals have thoughts? Of course they can. When they were first noticed, these repetitive disorders, it was in all creatures, great and small. An elephant, on the left, in a zoo, in a situation of confinement, suitably genetically primed, expresses that by engaging in a normal behavior of walking but, when you can't go anywhere, because you're chained, you walk in place, which is called weaving, and you weave your head from side to side, and your trunk goes to the left and to the right, and all the animals, none of the ones in the wild do that; it just doesn't happen in the wild, it's only in captivity, only in zoos, and even in the San Diego Wildlife Park, where they're free to walk, they obviously were confined before, because they'll do it in the middle of a field, so it gets ingrained, and the big cats here will walk in circles. Any old big cat will circle, because in nature, they would normally walk miles and miles and miles in search of prey and have a big home range territory, and round they go, around in circles, wearing a groove on the way to.

I've treated, indirectly, polar bears. One in the Saskatchewan Zoo that was walking compulsively, and we treated it with Prozac. I figured the dose out for them. It was published. Shut it down, just completely got the dose right, it stopped pacing. It has always been an interest of mine, is why they do it, how they do it, what's the genetic priming, what are the anxious circumstances, what is the mechanism and what's the treatment? What are the genetics, because the genetics underneath will tell you, not just the gene, the gene tells you maybe the protein the gene is making, but that leads to a pathway, that protein works it this way, then links with this, which links with this, it goes to that, and you can see this whole pathway, which you can then intervene, treatment-wise, to fix. These are the human OCDs. These were originally called stereotypies. They didn't become compulsive disorders until a famous publication by the head of Child Psychiatry at NIMH, National Institute of Mental Health, Dr. Judith Rapoport, who wrote a book called "The Boy Who Couldn't Stop Washing" and, when she got back to her office

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after a national book tour, New York Times bestseller, she got all these messages on her machine, saying “My dog does that.” Being a smart woman, instead of just going, “That’s crazy,” which some people still do - “Animals, you can’t learn anything from animal” - she said yeah, let’s try out the human anti-obsessional drugs, like Prozac and Paxil and Zoloft, let’s try it out in these dogs. They respond exactly the same way, over exactly the same course of time, and so she wrote a paper in the Archives of General Psychiatry in 1992, which explains that this is a wonderful model study of OCD. Her angle as a human and MD, was we could study the condition in people by looking into what these dogs are doing in many ways, especially genetically, that’s an easier model to study.

There I’m just recapping, the compulsive disorders’ natural behaviors form excessively. There’s nothing abnormal about them. If you take a spectrum of OCD, whether it’s pyromania, that you run around setting fires, and you keep thinking about lighting things on fire, which you might only do once every month or two, but it’s a problem if you keep setting buildings on fire! It might be trichotillomania, where you’re pulling your hair out, but a little bit of grooming is not unusual, and with the cats with the psychogenic alopecia it’s the same deal. Genetic and environmental factors come together, so this makes it very difficult to study because, if you have the genetic makeup, but you’re not put in the pressure cooker of life, you don’t have the anxious circumstances, you may never express it, even though you are genetically prone to it. On the other hand, if you have a genetic inclination and you have the right circumstances, then it will express. If you take pigs, another species, if you put them in the pressure cooker, which is in these horrible stands they are in, with iron bars down either side, they’ve got nothing to do, about 20% or 30% will chew chains and bite bars. They don’t all do it. They don’t all have the susceptibility to it. In humans, it’s about 2% to 3% of the global population that’s affected with obsessive compulsive disorder. It’s a major condition, and it’s very debilitating, and you typically don’t die of it. It’s really lifestyle-altering. It affects you, it affects your family. Especially hoarding, which is one of them, and there was a woman killed by her collectibles when they collapsed on her. So, this is probably not an OCD. Glass of water please, I’m not going to drink it, I’ll just knock it over on purpose. [laughter] My cat does that. I should point out that, although I have an interest in OCD across the species, the fact is I’m also a cat person. I was raised with cats, I had cats when I was a kid, I had cats when I was teenager. When I was in university for five years, I didn’t have the facilities to have a cat. I was never there, and a little tiny room. I had one towards the end of that, but then after that, I have always had cats, usually in a pair. Right now, I have one. His name is Griswold, and he’s stone deaf, which I’m afraid my little son discovered. He’s like “Griswold, Griswold!” He said, “Mom, Dad!” We’re both vets, mom and dad, so he said, “I think he’s deaf!” Sure enough, he’s as deaf as a post, and he has neurological things going on, too. He goes on the counter and bounces his nose off and starts jumping fits around the counter, and he jumps onto the counter, he jumps, and then falls all the way back, and so it’s sad to watch, but he’s happy.

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Here we go. Wool sucking and pica which, in my view, Leslie was saying how, genetically, some things kind of ride together and, even though pica, which is literally the indiscriminate eating of inedible objects, looks a lot different from nursing on some woolen substrate, but not really, because they overlap, because some cats that nurse on the woolen substrates will also ingest the substrate, so I think it's not really pica, actually, because it's really a texture-specific eating disorder, so they don't eat everything, they just eat some things, things that feel good. It has something to do with taste or touch that they really enjoy. Wool sucking, just generally, sucking or chewing on woolen, cotton, and synthetic substrates. Wool is the favorite. They're not shy; however, some won't go for acrylic -not snobs – and other synthetic substrates may progress to pica. Cloth, hair, plastic, shoelaces, electric cords, paper or wood. Plastic is a big one. For some reason, running gear too. If you have silky running shorts, the cat will take the lid off the laundry basket and go in there and pull them out and they come out, and it looks like you're living with a nine-pound moth. Could it be a kind of nursing behavior? Could it be something to do, like children who are weaned too early I believe, may, like veal calves will nurse on something, like in humans would be thumb sucking. In veal calves it could be an umbilical hernia or, on the calf next door. Could it be something to do with early weaning? Something like a facsimile of thumb sucking? It begins, sometimes, this suckling behavior, directed at the fur of fetal sibs, and it can generalize to a variety of substrates once the cat is separated from the group. All these were sort of theories, which I think you're going to see that the Winn funding has helped us to establish.

This is a little video of a wool-sucking cat that belonged to a photographer at the veterinary school. He allowed us to photograph his cat and, if you just looked at this, you saw about three seconds of it, you think it's not that bad, really. It's interested in something inside that woolly blanket, but it sort of goes on and on, so on its own, like hand washing in a person, not too abnormal, but when it doesn't stop, and you've got the kneading, and you've got salivation, and they chew with their premolar teeth on the side, not so much the incisors, there's a pretty classical pattern of what they do and, like I mentioned, some of them will actually ingest these things they chew. They bite things off.

This is a chapter in *The Cat Who Cried For Help*. It was a cat called Lucky, the wool-sucking cat. That was Lucky's real name, and that was a sweater hanging upside down on the line that the owner said "I give up. I'm going to leave this sweater on the ground, because otherwise he's going to find all the other stuff, might as well have all the damage here." It's like dedicating one chair to a furniture-scratching cat, and that was what happened. It looks like someone has been at it with a scattergun. So, it's a nuisance, really. I know a woman who had her wonderful woman skirts, and the cat would actually break in like a thief into this cupboard, eat the woolen skirts and pants and whatever, and then she'd have to take them to have them expensively repaired. She would put them in there, and he'd break in a second time. It's just like they're a terminator; they can't be stopped. So, it becomes an expense. It was for her, but also some of the cats who ingest things actually do get intestinal obstructions, which can, if not treated early, usually surgery, it can be fatal.

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Risk factors are being an Oriental breed, so looking at it from Leslie's talk, it's the cats on the right-hand side, the Asiatic genetic makeup type cats. Oriental breeds. Siamese, 50% of all the ones that are affected, so the Siamese seem to be king pins in this, but then there's the interaction of, perhaps, some other genes. Maybe being more anxious and having an overdose of these genes. It could be more than one gene. It could be some of these switches that turn things on and off, also, that Leslie was talking about. We would look at it, because it's just one of the many OCDs that I've thought about, and we did publish a paper, so it's a publication, and we have another one or two to follow, published in the Journal of Veterinary Behavior, and Clinical Applications of Research a little while ago, December 2015.

I want to point out the first author there, Dr. Borns-Weil was my resident in Behavior, and she pulled together all the data. She came along after we had started the study, where we had all this raw data, we had all these files, we had all these Excel sheets, we had the statisticians lined up, and I said to her "I'd like you to see this project to conclusion," and she did, and she worked on it, and she thought about it, and she did tremendous work, so I hope you will her name in connection with Winn Feline Foundation going forward in the future. She is a very good person. She pulled it all together for us. I ended up the senior author, last. We looked at 204 Siamese and Burmese cats. It was meant to be 100 of each, but we overlapped a little bit, so we went to the 100 Birman, 100 Siamese. Half of each group was affected and half was a control, for comparison, and this was the behavioral side, so we took the behavior of all the cats, and we analyzed it, which we had done before, with the bull terriers with the tail-chasing and found amazing things. It turns out they had autism, which we also did with the Dobermans and found out that, actually, the Dobermans also have a form of pica very similar to the Siamese cats and, actually, when we MRI'd their brains they have brain structure that is exactly similar to people who have autism, almost precise, down to a small area of the brain, like there was some problem in the right anterior insula in the cerebral cortex. Same in the dogs, same in the humans, a problem in the corpus callosum, which connects the two sides of the brain. Same in the dogs. Same in the humans. Everything was cookie cutter. In the dogs, we found markers for autism and everything. Everything is falling into place. So, we wanted to see, how do these cats match up? Is it something that travels with it? Is there another condition that's riding on with it? Is there some environmental thing that's triggering it? I guess this was the design. We wanted to look at all these factors. We wanted to see if there were differences, and we looked at things like – signalment means age, breed, sex, neuter status, and so on – we looked at physical characteristics, even apple-headed versus non-apple-headed, which it turns out wasn't significant. We looked at medical conditions that may or may not travel with it, appetite, environment, environmental experiences, weaning age, number of litters, source. There wasn't much we didn't look at. The survey was pretty wide. So, the results, I'll do it in more detailed form, but in this sort of general way, was early life experiences, such as premature weaning, litter size of less than three, and rehoming earlier in life, were linked to an increased risk of wool sucking in Birman cats. Later life experiences, such as lifestyle, number of cats in the home, resulted in an increased risk of wool sucking in Siamese and Birman.

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We had a little bit of a confusion here though, because it turns out that, genetically, we look at things on the surface, and they seem to be what they are, but when you look at them genetically, they might be completely different, or things you think are different are actually the same. So, when we came to look at the Siamese cats, and this was Leslie's work, using this climbing mountains from different directions, with the multidirectional scaling, it turns out that the Siamese weren't all pure Siamese. So, anybody who had a cat that had color points thought their cat was Siamese, and so that actually put a lot of cats in there that weren't pure enough for our analysis to work well, but the Birman, the other one group we looked at, how could you miss a cat that's got white feet? So, they were clumped very closely together on a plot, and so for genetics, it was much better. So, I think, even in the behavioral study, the findings across the board were what they were, and I'll show them in the next slide, but while some of the things applied to Birman and not so much to Siamese, I think it's because the Siamese weren't so genetically homogeneous.

That's just the summary of the details. Birman versus control Siamese versus controls. In red, these are identical, right? More affected cats were kept as pets. Now, what that means is they come out of the breeders, and they are rehomed into some other home. More of the controls are used for breeding. That means they're kept more with the breeders, and they might be with a bunch of other cats. Fewer than three housemates, which is more likely to happen when you're rehomed with an owner than if your cat is in a cattery with other cats, and it's exactly the same in Birman and Siamese cats. The differences, which I say might be artifactual, but the Birman for sure, and this is the pure group, more likely to be have weaned at less than seven weeks which is, with those Birman, and probably cats in general, clearly wrong, and having fewer than three sibs, so if you're early weaned, and you have a small litter, you've got a bigger chance of having this problem. If you're acquired at a younger age, .28 versus .57 years, you're more likely to get it, but when you looked at the Siamese, one thing that came out, even though they were a motley crew, the greater percentage of the cats engaged in this behavior. So, yeah, it was more common in them, and they had longer bouts, and much more severe behavior, so the Siamese were the most severely affected, and my understanding is, and I'm not as good on my history of cats as Leslie is, but my understanding is that the Birman breed was pretty much almost wiped out in the Second World War for some reason, and it was reconstructed, bringing a lot of Siamese in, and maybe that's why the Siamese is this sort of motherlode of genetic glitch, and the Birman kind of inherited a fair amount of that.

I studied more on hypotheses that environmental stressors, such as early weaning, may be associated with increased risk of wool sucking, and they have found the development of wool sucking is differentially affecting Siamese and Birman by early environment. I think I would almost interpret that as, if you're weaned too early, you have very little company, you have too few litter mates, you're in a house with very few cats, if you're with an owner who doesn't really know really much how to interact with a cat, how to enrich the environment, and you have the genetic glitch, then you're going to show it. So, genetically, we knew. This happens to be Burmese, a pica family. It's a very small family, but we knew this is one of these genealogies that, if you have an affected one, and you see at the top, this male/female pairing with a blue and a yellow dot, is affected, and you can see the yellow dots travelling around.

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Well, eventually at the end, you've got a pretty complete picture, so that's just some of the earlier work, before we got into these more serious genetics, I think Dr. Moon created that plot just from family tree stuff. I think, truthfully, like in people, it's all in the genetics. In people, they can't find the gene, and the reason is because people are outbred. The population in general, there are a few clusters that aren't, and these are the ones that the geneticists want to look at, like my friend, Dr. Gins looks at the Amish, who are very inbred, and they have certain conditions, apparently. One of them is a bizarre form of dwarfism, where actually, not like achondroplasia, not like the dachshund or the munchkin cat, though that's different, I guess, but they're just very small, but everything is in total proportions, but they're very small. When they have that problem, they don't have schizophrenia, which is another problem in that community, so the dwarfism thing protects against schizophrenia, so sometimes you could look at the behavior, and you could make some deductions. That actually led Dr. Gins to come up with a theory. He thinks he's discovered the secret of bipolar, and he thinks he knows the gene, and he thinks you can turn it on and you can turn it off, so it's all in the genetics. We know that, and we thought we'd try and find out what was going on.

There's the cat chromosomes it's a terrible picture, I got it off the internet. Leslie's is much nicer. There they are, and there is, I don't have to explain it, the Manhattan plot, that Leslie made for us. This is the second part of the study, so we did the phenotype looking at the behavior, and then we sent samples to Leslie and Barbara Gandolfi, and they produced this Manhattan plot from that output from the genetic machines, and there were a couple of interesting points there. You can see this big blue one. This is obviously something pretty strong. Leslie explained it, so I'll just say this particular high-rise building here on chromosome 18, although you like to call it by a different nomenclature, right? F2? F2. That's very promising, and there's another peak down here that's on chromosome 2, what I call chromosome 2, is interesting. So, that's kind of where we're at right now, and it turns out these two peaks riding inside the area they were identified, were several interesting genes, but the most interesting ones were something called NCALD which is something to do with calcium physiology, calcium flux and function inside of the brain, and the other one was also a sort of CNS gene, where ataxia, depression, migraine, learning difficulties and so on, so they are the two interesting ones. We wanted to look at it further, so the study is not over, this is not the be-all and end-all, these aren't necessarily the genes even so we've self-funded to try and look further into it, so another \$3000 a pop for looking at the whole sequencing, which is now in Leslie's lab and Barbara's. They are working together. I think the results are out, but the analysis is going to take longer. We'll know if these are involved and I sort of really hope that the NCALD comes off, because we've been working separately now with my old friend, Dr. Schuster, the pharmacologist. He is always thinking, at the age of 86 now, and he's only just retired, he puts me to shame, but he said, "You know, I think calcium has something to do with OCD," and I said, "That would be great, because we just found this NCALD gene, and apparently, what it is, is he looked at two versions of the same drug. There's a drug called acamprosate, which is used, particularly in Europe, to treat recovering alcoholics and, in a way, you could think of alcoholism as being a compulsive disorder, because the addiction to say nicotine or ethanol, it's pretty easy to taper somebody off, but what happens is it's never over, and it's never over,

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which one day at a time, one more drink and you're back on the wagon, it's never over, and that, I think, is an OCD, so I think that's the obsessive compulsive components of cigarette smoking and, even after you've not had a cigarette for 10 years and you walk into a particular environment, you have to resist the urge all over again. The nicotine addiction, you can wean a lab animal off of nicotine in about a week, so why is this going on for 10 years? The fact is, with the alcohol thing, with acamprosate, it's known to treat the recovering alcoholic to help them on their way, and most people use calcium acamprosate. It turns out the sodium acamprosate doesn't work, so the literature is like 900 pages long about acamprosate and treating this condition, and people are on either sides of the fence, but one thing's for sure; when you use the sodium salt, it doesn't work; use the calcium salt, it does work. So Schuster said, "I'm going to try calcium alone in mice." So, we have a model of compulsive disordered mice with a repetitive disorder, and we gave them the calcium, it stopped. So, we're now doing it in horses, and we're finding out that horses with a horse compulsion, they're stopping, so we're sure there are publications out from years ago where people have suggested treating OCD with calcium; it's gone, it's swept by the wayside. We've found them in retrospect, but they're out there, and there's another crazy idea he had, with the risk of boring you, is he learned, because there's a component of goat's milk called caprylic acid, and you take this salt of that sodium octanoate because it's the same thing as sodium caprylate. You take this goat's milk thing and, it's used to treat some kind of tremor in people, and Schuster has essential tremor. It's not Parkinson's, but when he's thinking very hard, his head goes to the side like this. It gets him into trouble at the lecture. Someone's lecturing to him and he's going like [---], so I see this guy in the front row looking at me like I'm insane. He is always in the literature about repetitive movement, so it turns out that this goat's milk is a treatment. Nobody knows how it works. He decided to try it in his OCD mice. It worked, and actually, then he found if you give the calcium followed by the acamprosate, you have like a 2+2 is 5 treatment, so we're giving the horses calcium followed by caprylic acid. The first horse we did was raised on goat's milk, because its mother was used for milk for thoroughbreds, so they took the baby away real early, of course. Wouldn't you know, the horse cribs or bites on the edge of his stall, of course.

So, enough of those genes. We are sequencing three severely affected Birmans. We're particularly interested in the NCALD gene, and it's one of the papers is calcium, Obsessive Compulsive Disorders: Cerebral Calcium Deficiencies of Possible Etiologic Pathogenic Factor in OCD. So, we're getting in the calcium horse, so I was delighted to find an NCALD.

Alright, enough of that. I would have liked to have looked at the genetics at the behavior of psychogenic alopecia also, but the trouble with psychogenic alopecia is that it's so easily confusable with a medical condition. The wool sucking isn't. A wool sucker is a wool sucker. A tail chaser is a tail chaser, but I've had cats come into the clinic, and there's this cat, the pattern is classical: inside, down the abdomen, inside the back legs, and I said I think it has it, but let's just call in Dr. Stewart, the dermatologist, for a final say. So she comes in, puts on a x 10 loop, looks down and says, "I don't think it is, Nick." I'm like, "Why not?" and she says, "Look at this. Put the magnifier on."

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Little red dots. That doesn't happen in an OCD. You don't get lesions. They just chew the hair off, so you have broken hair shafts; they're like tearing the hair out, there's nothing wrong with the skin. So, she goes, "I think it's an allergy." I said, "What are you going to do?" She said, "I'm going to use long-acting injection of triamcinolone acetate," which is her favorite steroid. She injects it. Three weeks later, the cat's not licking anymore. If it responds to corticosteroids, it is not an OCD. There are other things, too, that can cause hair to fall out, so it's was a bit confusing, so we wanted to stay away from it, but I'd really like to look at it. If I did all the rule-out tests, I'd really like to look at this one next.

It is actually a feline version of trichotillomania, like I said. Anxiety leads to the repetitive behavior which is directed at self, and that occurs in people, and it occurs in parrots. Parrots are really interesting, because not every person and not every parrot, but one of the features of certain versions of trichotillomania is that the people, as they are doing it, they kind of go off into a dream, and they look around, they find that eyebrow hair, they find a particular one. They look for it. Usually a new growth, and they pluck it out, and then they look at the shaft, and they may chew on it. It's called trichophagia. Then they discard it, and then they're off again. The parrots take their beak, and they look down on their chest, and they look around for a new feather, like a little new growth, and they pluck it out, and they hold it in their little gnarly hand, and they inspect the hair shaft, and then they rip it into bits, it looks like a fan, and then they discard it. So even down to the details of behavior, the parrots look like it, the people have it, the cats have it. It's an OCD, but we can learn so much, just talking about the biological importance. It's biology. It's the biology across the mammalian species. So, we can learn about cats from people, we can learn about people from cats, we can learn about people from dogs, and even parrots.

There are a couple of slides, inside the back legs, maladaptive grooming, out of context, repetitive and intense. Oftentimes, there is a stressor moment, and I don't think I've ever not seen a cat that had a specific stressor moment, and one was a cat I wrote about in that first book again. It belonged to the now deceased Dr. Bob Fleishman a great vet from Northboro, MA, board certified in pathology, but running a general practice, and he had a cat, which was a calico and female which, actually, trichotillomania affects women more than men, and it affects female cats more than male cats. He had this cat, and he adopted another one out of the goodness of his big heart into his house. When the other cat came in, that day, the calico hid, wouldn't come out, started to strip its hair out. So, the arrival of the new cat was a stressor, and we've seen that the stressor incident puts them right into this, and then they never stop. We did try to stop it; we used one of the, in those days, we were big on the Narcan approach. Used something similar to Narcan and had his wife medicate the cat every day, but the trouble with that particular medicine, it's really, really bitter and, after about a month, she couldn't catch the cat to give it the medicine, and he said "To hell with it, it's just going to have to have it the rest of its life." I said, "You could always give the other cat back," and he said, "No!" Find it a new home, he wouldn't, so that's how it ended up. The treatment was working, too. Actually, I forgot. That is the cat. That is Bob Fleishman's actual cat, and those arms are actually my wife's arms from about 28 years ago. It looks anxious, and its face, it's got a sort of frightened, starey look, and its ears are going back, and it just looks like an anxious cat.

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Here is a shot of alopecia. The pattern is like, if you took a cat - I wouldn't want to do this - by the scruff and by the rump, and you pressed it down onto some ink paper, the stain on the underside of the cat would be exactly where psychogenic alopecia strikes. If someone comes in and says it's got fur on the outside of his back leg, it's not it. It's not a stressful incident, and having an anxious temperament, so I thought, even in the early days, with the horses, when I was sitting out there like a tent on fire, on high counting horses cribbing, I noticed that the ones who did it were much more active, so if there's six horses in the barn, one had the cribbing that I was studying, five of them would be resting with a rubber lip on their leg, just hanging out, waiting for something to happen, like my dog Jasper, and others, like my dog Rusty, would be like it's looking at the stalls, and it's crib, crib, crib, so it seems to be a type A personality; an anxious, nervous, a worrier. My dog, Rusty, does the worrying for Jasper, because Jasper is always asleep. So, genetic predisposition, we're sure, because of Oriental breeds overrepresented in the Siamese factor I mentioned. Other stressors involved, no spontaneous onset in the Tufts Cummings School of Veterinary Medicine caseload. Arose at any age, but often around puberty or earlier, which is the human situation, too. More common in females, mostly indoor cats. Never seen in a wild cat, which stresses the importance, if you're going to have cats indoors, of company, environmental enrichment, exercise, games, training. You've got to get with the program, and our houses, typically, are not set up for a dog or a cat or much else, apart from us, you know the TV and all the remotes and that kind of stuff is for humans. You have to think like a cat to make an environment fit for a cat, if you're not going to let it out and letting it out wouldn't be a very smart thing to do these days.

There's a little tiny, tiny family tree from Dr. Moon with one affected cat bred twice, leading to litters that had affected ones. She was looking into the family tree aspect along these family studies that Leslie was talking about. It happens in families. So, there's a typical look of a cat with the condition. That's atypical. So somebody brought that into me from the vet, and they said, "The vet thinks the cat's got psychogenic alopecia." I said no it's probably got allergies, and it's ripping itself open.

Here's a cat. This is called Pia, P-I-A is the cat's name, and Pia started to pull its hair out when its lady owner, who was a very highly-qualified human surgeon, went to England for a conference that lasted a week, and she decided to stay a few more weeks and just enjoy London, and she left a cat sitter, who came in, did the litter and the food. Then the cat, when she came back, she said, "I thought it snowed." There was all white fur lying all over the place and, suddenly, she realized it's her cat's fur. That was what precipitated it and, incidentally, the other thing it did was bite its nails, because nail-biting is a mini-OCD in people and responds the same way to treatment, and this cat, I think maybe in one of the videos, it's very poorly lit, but you'll see it, it does a lot of nail-biting, too, which it didn't do before. If it was better lighting, if we turned off all the lights and blew it up, you would see plucks, and you see like a little snowflake of white fur comes floating down. Poor old Pia.

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Condition number three, because we're getting short on time. Feline hyperesthesia. Is it a compulsive disorder? Because they do compulsive grooming. They turn around, and they start grooming at their spine, the base of the tail, or the tail, and yes, they do respond, sometimes, to anti-obsessional drugs like Prozac, but a lot of people don't know that Prozac, in clinical doses, actually has anticonvulsant properties. So, I think, probably, number two, it's a partial seizure, and it started actually here, this area. It was the California-Nevada-something tristate veterinary meeting, and I had said this is a compulsive disorder, and two sage, older vets, who looked like the two guys in the Muppets show sitting in the balcony, and they say, "I don't know that is a compulsive disorder, because I've seen some cats who were doing it, and then suddenly they spin on the ground, and they go into a full-blown grand mal seizure," and the other one, "Yeah, I've seen the same thing myself. Hmm!" So ever since then I was thinking about seizures, and everything I've done has indicated to me that's the root. I'd really like to spend more time looking at it. It is more common, again, in the Oriental breeds of cats, and it's very well known in Siamese. I think – yeah, that's the tail of one of the first cats I ever treated; Jean-Paul the Siamese, whose tail was a rat tail because he ripped it off. What with that we know is, bursts of aggression, so I was called in to see Jean-Paul, because he attacked a student, bit him badly, and he had to go to hospital for IV antibiotics, and I went. They said, "You've got to come, you're the behaviorist." I was a brand-new behaviorist at the time. I rushed along there, and the cat was nice as can be, with a rat tail. We treated it. That was treated successfully with an anti-obsessional medication, but they respond equally well, and sometimes only to anticonvulsant medication. So, a stressor can be a factor. There are the same breeds again, the ones down at the right side of Leslie's slide, the ones from the Asia department. Indoor cats only, so this is a stressful situation, and age of onset is atypical for an OCD, because OCDs happen before or during puberty, both in humans and in all the animals we've studied. They don't start at five or four years old, because that's too late. This starts later in life, and later in life is oftentimes when seizures start, and they do other things. Dilated pupils, their skin ripples, they have this frenetic grooming, and then, sometimes they have tail swooshing, or a fixation looking at that, and then they will run away like crazy, they run and they run looking over their shoulder, like being chased by somebody, and there's no one there. Sometimes they see things. I had a picture once on a video, and I've seen it in my clinic. The cat, you stroke it on the spine – that's what hyperesthesia does, heightened feeling – stroke it on the spine, and all of a sudden, it looks at the corner of the room and then ducks, and then other side, just like a little spaceship has come in and taken off, like little green men. I've seen it twice, as though they see things. An MD in the front row one time, he said, "Have you considered this as a possible model or schizophrenia? Have you tried treating it with neuroleptic drugs, the anti-schizophrenic drugs, the anti-psychotic drugs?" I said, "No, actually, I haven't." I almost got it published. I wasn't sure I wanted my name on this, but there was a person who was a very senior human psychiatrist, Dr. Hollander from Columbia, and he has a journal called CNS Spectrums, and he said, "We haven't got a model for it, can you publish this?" I said, "I don't know enough to want to have my name on it at this point." Sensitive to touch, may appear to hallucinate, mood swings from affectionate to aggressive, aggression may be self-directed, in terms of biting or ripping at their tail, or it could be aimed at people, which is kind of scary.

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I had a photographer come in to Tufts to take a picture of one and, as he's filming it, all of a sudden the cat turns on him, and he said, "Eek!" and the cat leapt right at him, and the last thing you see before he dropped the camera is this cat flying into it. Sometimes, like I say, it's associated with it. The late great Barbara Stein was a veterinarian who saw this as a seizure problem, and she said there are many different varieties of feline hyperesthesia, from the frenetic grooming. She had four different types and ended up with frank seizures. She was on the board.

This is a more typical version of it in a little Siamese. That looks pretty normal, just grooming, but they often do that head shake, and then they go do a stare. Groom, groom, groom. No good reason for grooming that much, that often, and then staring, big pupils, you see. That's a minor case, really. This is a more major case. It's a cat called Katie, and you'll notice that Katie has a short tail, because when Katie's owner came back one day, she found that she'd pretty much bitten the tip of her tail off, and their whole kitchen was covered in blood. This is not normal. Having a battle with your own tail. Very angry for no reason. The kitchen was covered in blood. It was like a seizure manequin and she said, "I've got to get help," so she came to see me, and I put Katie on Prozac, 3 mg a day. Absolutely, completely normal. Absolutely, "stone bomb" normal. In the days when I thought it was an OCD, but I say the Prozac has this anti-epileptic property to it, and then they interviewed a vet in California, and they said, "Dr. Dodman says Prozac can be used to treat this condition." He says, "Well, I wouldn't use Prozac in an animal, because well, it's new, it's trendy, and it's expensive," and he was wrong on all three counts. Anyway, you get the picture with Katie.

Another feline OCD, which is Munchkins. I learned this from Dr. Solveig Pflueger who is probably known to some of you, and she was somewhat instrumental, I understand, in developing the Munchkin breed. She said if you have a Munchkin cat, you'd better know where their stash is, because they will steal your jewelry. Any shiny object. They're kind of magpie cats. If your earrings are missing, if you know where their stash is. They don't do anything with it, they hoard, so they're a hoarding cat, and hoarding's a real big thing in psychiatry. I went down to see the head of clinical studies at the National Health, NINH, Dennis Murphy, who's now retired. He leaned over the desk, and he says, "You don't have an animal model of hoarding, by any chance, do you?" because it's such a serious condition, it's so hard to study it, and it doesn't respond like the normal OCDs. "Yeah, a Munchkin." "I would love to study them from the point of view of ones that hoard and ones that don't, or some other comparison." So many things to do and no more time. That's not really true.

So, treatments. Some people out here might know someone with a cat, or have a cat that has some of these things. Physical strength might be necessary in extreme examples, like the Katie, Delela's cat. It might be necessary to prevent self-injury while medicines work. It's really a lot of medicine, but I don't like to put these Elizabethan collars on cats or dogs or horses. I think physical methods are stopping; they're kind of primitive. It's like putting someone in handcuffs because they steal, or chopping off their hand, like they do in some of the Middle Eastern countries. I think you need to address the underlying stressors. I think you need to enrich the environment, get the cat a life. I think you need to consider medication, which would be the SSRIs, which is the Prozac family or, for feline hyperesthesia, the anti-convulsants.

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There's another group of drugs. Ones we found out, in animals with OCD, we found out drugs called NMDA blockers, drugs that block glutamate in the central nervous system, which is the primary, the numero uno, excitatory neurotransmitter in the central nervous system. It's not a small player, it's a big player. If you block that, you block OCD in mice, you block it in dogs, you block it in horses. We took the idea to Harvard. The professor said, "Okay, I'll try it in my people, but if you crazy vets are right, I'll eat my hat!" Well, it was delicious. We took out a patent on it, which went nowhere, but we do have a publication on it in Clinical Psychopharmacology in 2010, and now we hope to have one coming out in the future, because we're still working, Schuster and I. He's sitting there, he's 86 years old, with his bag of apples and peaches, which he always eats for lunch, and I'm sitting there with a clicker counter and score sheet with horses, calcium and the goat stuff. We're at the next visit, I think on July 17th we're going to east Long Island to look at another horse.

So yeah, medications, and that's me, because we're nearly out of time, but I'd love to hear your questions.

Leslie is going to be here, too. Let's let the moderator come up. Thank you very much.

Dr. Glenn Olah moderating questions for Dr. Lyons and Dr. Dodman:

If you have any questions, can you write them down on the piece of paper? There are some pens and pieces of paper on your table. We'll have some people walk around and get those questions.

I have a question for Leslie, and I know her a little bit in the fact that she and I have spoken at the same program. I followed with FIP; she talked about genetics. You said you're 25% Italian. I want to know what percentage Italian the Italian is?

The Italian? Barbara is in Italy right now. So, Barbara is 100% Italian. She's from the University of Milan. So, often I talk about Barbara Gandolfi. She's my cohort in crime. I call her the Italian, and so she's in Milan right now, actually, visiting her family for about three, four weeks and stuff and boy, she's about as Italian as you can get! She has learned to like hockey. She can't watch football, she can't watch baseball, but she's like, "Maybe this hockey thing I can kind of like," and she loves hot dogs, of all things, hot dogs, and she has discovered food trucks. Now, when I was growing up, you didn't eat at the food truck. That's where the truck that came to the miners and stuff like that, so you didn't eat at the food truck, but now, it's like fine cuisine, and there's competitions for food trucks, so she knows the whole food truck schedule in Columbia, Missouri. Barbara's great. Hopefully going to work hard to keep her at Missouri as much as we can, but we've got to work on funding for her as well.

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This question is for Dr. Dodman. “Cats who turn aggressive after requesting stroking, why? Why is it seen more in non-pedigree cats?”

Well, cats, I think the simple answer is overexcitement, so they get very excited, and this is not really a neurological or a psychiatric condition. I mean, my cat, Griswold, when I got him, he was very big on that. So, you’d pet him, he’d get very, very excited, very worked up, and then he’d do some little frenetic grooming, but it wasn’t the feline hyperesthesia. He just would do it like what some people call love bites. They nip, and they nip, and they nip. Well, my wife, the vet, she’s pretty strict. So, she would bop him on the nose with a finger and say “No!” but he couldn’t hear. So, he’s like, “What?” and then she’d walk away. I did the opposite. If he did that to me, I would just walk away, and actually, he almost never does it now. It’s just, they get overexcited, and they’ve got to do something, whether it’s a grooming or a nipping. I just think it’s a cat thing, like knocking stuff off shelves, which he also does. If I leave a pen or our cell phones on the counter, he just does it on purpose.

Question for Dr. Lyons. “For 99 Lives, for a breed without specific issues, what is the benefit of having one cat of breed sequence? How do we select the cat to represent the breed?”

All healthy cats are important, because, as I’ve showed, there are 16 million variants in any given individual; me, you, or the cat. So, the thing is, a lot of those variants are good ones, or just do nothing, actually, what we call neutral variation, and so having a good, normal cat of a different breed, different breeds have different subsets of genetic variation as well, so having just a normal cat in there will help tell us, don’t look at any of the variants that this cat has, and so it helps weed out all the variants that are good things that are in our body. We need that genetic diversity, that’s the whole important part. So, any normal cat is extremely helpful. It is nice to have healthy cats too, because we want to study health, but I greatly encourage anybody to put in a normal cat.

Dr. Dodman. “Do you believe hormones contribute to overgrooming?”

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Well, I don't think they contribute much, although I shouldn't say an absolute, definitive no. It sure is more common in females, but most of the females are already neutered, so it would have to be an effect of priming early on. I guess I'd have to say no, with a reservation, at this point. I mean, in the study that we did, we looked at neutering and un-neutering and sexes. I know it was wool sucking, but nothing came out of that, so I'm thinking psychogenic alopecia, there is this distribution. Who knows. Maybe it's an early priming. I certainly couldn't testify to it. One quick tip that I do learn from people in audiences, one time I was talking at a cat talk in Seattle. I was talking on feline hyperesthesia and another person, this time not two old men in the Muppets box, it was a lady vet from the back, and she said, "Feline hyperesthesia. I know it well. Have you ever looked at their cholesterol triglyceride panel?" and I said, "Why, no, I haven't." She said, "Well, if you do, you're going to find out it's completely off the charts, and sometimes she was implying not... I think triglycerides were sky high and, actually, sky-high triglycerides can cause seizures. I saw that in one dog that was a crazy bull terrier with all kinds of weird, wacky stuff. I said, "I think it's having a seizure." Took blood. Triglycerides, instead of being in the low hundreds, were up in the 2000 range. I treated it with the statin Lescol, which is a statin drug, and it got better. It was only a case series of one, but maybe these things have a bearing, too.

Again, Dr. Dodman. "Have you seen many, or any, examples of obsessive grooming of one cat on another?" The questioner says he knows one that plucks fur from the other cat and won't stop.

Yeah, we've come across that. In humans, it happens, too. Some mothers, they don't actually have trichotillomania, where they pull their own hair out, they pull the kids' hair out. So, it's kind of trichotillomania by proxy and, actually, Dr. Solveig Pflueger told me that the Ojos Azules cat they actually will overgroom and pull out their owner's hair. If they have long hair, the cat will actually pull your hair out, and so she had long hair. I don't know if she still has it, I haven't seen her for years. She had very long hair. She had a Ojos Azules cat, and she had to have it so that it lived, I think it went and spent a lot of time when she was sleeping, and it went in the house next door, because she had to be out of the way of the cat, or she'd start losing her hair. So yeah, that happens, too, and the veal calves, back to them and the stress. They not only suck on themselves if they're deprived early in life, they'll groom on the nearest thing, which could be the next cat.

Question for Dr. Lyons. "Regarding Devon Rex's hypoallergenic progress? How effective?"

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Many people have falsely thought that Sphynx and Devon Rex and maybe Cornish Rex are hypoallergenic, and that's not true. All cats produce an allergen that people are allergic to, just some cats shed more or less, or have more or less long hair, so even a Sphynx is producing allergen. A lot of it is in their salivary glands, but a lot of it also lives in their anal glands, so they pick it up from their anal glands, and then spread it all over their body, isn't that wonderful? People have also said poodles are hypoallergenic as well. Well, I'm told that poodles, their hair just grows more slowly, so they don't shed as much. So, it's not true that Devon Rex or Sphynx or any of these breeds are hypoallergenic. There is probably some truth to the fact that some cats probably produce more or less allergen than other cats, and maybe particularly in the Siberian breed, that there might be a much higher frequency that people have noticed. Other cats we didn't notice, because people haven't gone up and sniffed every cat to see if they are allergic to it or not. So, there's probably some truth to that. I think there are probably cats that produce high and low amounts of allergen, but whether they produce hair or not, it has nothing to do with whether they're producing allergen or not.

At least cats don't lick your face like dogs do!

This is a question for you, Dr. Lyons, again. "Do you only want cats that are pure breeds for a whole genome sequencing, or do you want domestic shorthair cats with health issues?"

Anybody can play, so absolutely, the random-bred moggies are just absolutely great cats to have included as well. However, we want to make sure we have good health records on the cats. Unfortunately, the cats that I've put in from the different racial populations, we actually don't have good health records on those cats, so we have to be careful of how we look at our data, but you have a normal house cat, and would like to put in the 99 Lives project, it's absolutely more than welcome. I'm just thinking about putting my own cat in at some point, but we'll see, she's kind of a little pudgy. Big boned, you know. I could look at obesity with her! Yeah, so any cat is quite welcome to be in the 99 Lives project. Everyone is very important.

Question for Dr. Dodman. "Could inappropriate urinating behavior in cats be considered an OCD behavior or treated with drugs?"

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I guess you could think about it that way. I mean, there are some that do seem very obsessive. I mean, it's a natural, normal behavior, but if you have an anxious cat, who is stressed and does it over and over again and is hard to control, maybe so. I've often thought furniture scratching could fall into that category, too. I've seen cats that are minor league furniture scratchers, and then another cat moves in, or some stressful situation, they go absolutely nuts, because that's a marking behavior, too, so if not furniture scratching, and the response to drugs? Sure, I don't think many people would raise their eyebrows if you said I'm going to treat this major-league furniture scratcher, like my cat, Griswold, which is not being treated, but I probably could treat him with Prozac, and we know with urine marking that Prozac is the most effective treatment. When I first got into this, I was told urine marking cats, by a behaviorist who shall remain nameless, said, "Very often the solution is they have to be put to sleep, because people can't live in this latrine situation, it's causing breakups of marriages, selling of houses. You just have to give up." Now, with Prozac, 100% of cats respond with a 90% to 100% resolution, simply with Prozac. I would say you need a good cleanup, too, with a decent product like Zero Odor. They've changed the formulation recently, but that used to be 100% percent fixed. I knew the chemical, and it bound to the sulfur containing minor groups. So yeah, it's no longer like it was 25 years ago, like, "Oh God, what am I going to do here?" Try amitriptyline, try this, try that. Nowadays, it's like, "Yes, I can help you," and with litter box problems, 100% yes, I can help you.

Another question for Dr. Dodman. Alopecia. The questioner wants to know if you've heard of the use of L-tryptophan in milk proteins in a food of Royal Canin called Calm? I think Hill's also has the C/D, where they add the milk proteins and Zylkene.

I do believe in L-tryptophan. Actually, I've done some studies with dogs, for aggression, but the fact is that, in Europe, they very often use either L-tryptophan or the 5-Hydroxytryptophan, which is the next in line, because L-tryptophan goes to 5-hydroxy, which you can buy at CVS, (5HTP on the bottle) which goes to serotonin. It's just an amino acid. You can add it to the food. You will stoke the fire of serotonin, so you're increasing the production. The only difference between it and Prozac is Prozac is, if you think about a bathtub, the tryptophan is turning the taps on to fill the bathtub quicker, and Prozac is when you plug in the bath to keep the water in more, and they can actually work together in tandem. Sometimes you go to Prozac, no response. You go with tryptophan, they work. I believe that L-tryptophan is very useful as an anti-depressant, anti-fear, anti-aggression, anti-compulsive, it's got all these possibilities, but the milk protein I cannot handle that stuff. What I mean is I don't even believe it works. There are a few companies out there – now people have gone all alternative medicine on us, it's gone back to the ages before there was a veterinary degree - they're using all these alternative treatments. I mean, it's based on the fact that, supposedly, if you drink a glass of warm milk at night, you're going to feel tired and relaxed. So, Ah! Good idea!

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We'll take out the milk protein, and we'll give it to them and call it a whatever it is, or stick it in some diet. When it goes down to the stomach, it's going to be broken down. I talked to a behaviorist, Danny Mills, in England, about that, and he said, "The secret to the milk protein is it's encapsulated, so it's not broken down in the stomach, so when it goes into your intestines it's broken down." So, it's going to be completely dismantled when it gets there, and I just think there are a lot of king's new clothes stuff around, but when you consider the placebo effect in veterinary medicine rises about 35%. In humans, you can give a human a blank tablet, and say, "This is a placebo," and a large number of them, particularly with a certain dopamine gene glitch, who will automatically feel better, even though they know it's placebo. Well, the animals don't have that insight, but the owner does. So, if a dog is given, a cat is given, a horse is given a placebo, they're going to think they're seeing something because they want to. They're living on blind belief, so if you give the milk protein, you're going to get lots of vets who say, "I gave it, I've had a couple recently, they did that." It doesn't matter about one or two, because the owner is going to come back and tell you lies. It happens with everything. You have to have experiments that are designed to eclipse the placebo effect. It's got to show 70% improvement, not 35%, for it to actually be real.

"I wonder if the milk protein, when it's broken down, if it has more purines than again dopamine or serotonin more like tryptophan and amino acid sequences?"

Yes!

This is a question for Dr. Lyons. "Is there a genetic component to FIP? Should siblings of FIP cats not be bred?"

I don't think we just really know the answer to that. Certainly, we have shown that there might be a higher susceptibility in some lines of Birman cats, so we've published that with Dr. Petersen, but no, right at this point, I wouldn't recommend not breeding a sib. I mean, many sibs are on general 50% alike, but that can range from 0% to 100%, so 50% is just an average, so you could have a totally different set of genes in a sibling that, even if you did have a cat that was susceptible to FIP from a genetic point of view, the sibling might not be whatsoever, so I have never been a big proponent of that.

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One more question for Dr. Lyons. This is the last question. “Regarding dilutes’ silver variant, how can the silver variant gene affect dilute gene?” There is an example, I think. The brown tabby female carrying the dilute, the silver male who appears as a blue silver, the male comes from a silver male and a brown patch female carrier dilute.

This is a Lorraine Shelton question. Where’s Lorraine? I don’t really know. I mean, to me, you should have like a smoke dilute cat, if it’s a solid cat. If it’s an agouti cat, then the band in between the blue should be white, and so you should still, as far as I know, should just have a normal presentation of silver, but on a blue cat, but Lorraine, where are you? It’s time for you to get into action. She was in the back there somewhere. So, that might be a good question for her. So not quite sure. Pictures always help.

Thank you. That was the last question.

Please take your folders with you. Please, or they come back to New Jersey and myself. We want to have these adopted. She would feel very bad if you didn’t take those home and enjoy what we’ve put in there, and I certainly brought the Kit-Kat bars that came in my suitcase from Oregon and hope that the TSA people didn’t confiscate them. Please enjoy, okay?

The End

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