TODAY’S BREEDER

World-Class Competitors

Beameups Scottish Terriers

- Adverse Drug Reactions in Dogs
- Purina Pro Plan Formulas for Performance Dogs
- Siberian Husky Masters Agility
GOLDEN RETRIEVERS SHINE AT GRCA NATIONAL SPECIALTY

The tail-wagging enthusiasm of Golden Retrievers brought joy to proud fanciers at the Golden Retriever Club of America (GRCA) National Specialty held last fall at Purina Farms. With 2,702 entries in agility, obedience, rally, conformation, tracking, hunting tests, field trials, and WC/WCX certification, the event was one of the largest National Specialties in the country in 2018.

Known as a biddable breed that wants to please, the Golden Retriever is naturally affable. The gentleman's hunting dog, an efficient waterfowl and upland game retriever, and trustworthy companion was developed 150 years ago in the Scottish Highlands. Today, the Golden is a beloved dog cherished by many.

An impressive Best of Breed lineup that started with 238 contenders was whittled down to a cut of 28 dogs over 1 ½ days. Breeder judge Ellen Hardin of Custer, Wisconsin, was seeking “the overall Golden Retriever, one with a solid work ethic and outstanding temperament,” she said.

That vision was realized in a 21-month-old bitch named “Joannie,” competing for the first time in the Best of Breed ring after finishing her AKC (American Kennel Club) championship title in May 2018. Breeder-owner-handler Ann M. Greenbank of Verdoro Goldens in Androssan, Alberta, Canada, who breeds for show and performance, described Joannie as “a bit old-fashioned without tons of coat but with good structure and sound movement.”

Hosted by the Golden Retriever Club of Greater St. Louis, the 79th GRCA National was a celebration of enthusiasts’ genuine love for this friendly, good-natured breed.
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PURINA PRO PLAN OFFERS FORMULAS THAT DELIVER PERFORMANCE NUTRITION

The Purina Pro Plan portfolio features formulas with optimal nutrition for show and sporting dogs.

AGILITY PRO, ‘NANUK,’ A SIBERIAN HUSKY, IS OWNER’S FIRST DOG

Rusty Boone intended for his first dog to be a pet, but “Nanuk” became a breed record-setting agility dog.

BEAMEUPS’ STAR-STUDDED SCOTTISH TERRIERS

A determined perfectionist, Rebecca Cross has gone to the top, winning some of the most elite dog shows in the world with her Beameups Scottish Terriers.

SAVING SIGHTHOUNDS FROM ANESTHETIC DRUG DEATH

Beautiful and fast-moving sighthounds also are at risk for inheriting gene mutations that can cause a life-threatening, slow recovery from anesthetic drugs.

ON THE COVER

BIS/Multi-BISS GCH McVan’s Big Bopper At Beameups (“Bopper”), a 4-year-old male Scottish Terrier owned by Rebecca Cross, Dr. Vandra Huber, and Dorene Cross. See story on page 12.

THIS PAGE

An inherited adverse drug reaction to anesthetic drugs was realized in the early 1980s in Greyhounds that recovered much slower than normal from the effects of barbiturates. See story on page 20.
Restoration efforts to protect and improve Iowa’s waterfowl habitat are underway to help revive the wetland breeding grounds of migratory birds. The three-year sustainability initiative is focused on improving 1,600 acres of wetland habitat across the state and ultimately improving soil and water quality.

Ducks Unlimited and Purina are partnering on the project, which is part of Ducks Unlimited’s Living Lakes Initiative. Purina has manufacturing facilities in Iowa in Clinton, Fort Dodge and Davenport, and has committed $1 million to improve the Prairie Pothole Region.

Partnering with Ducks Unlimited since 2015, Purina previously gave $2 million to support the USA Rice/Ducks Unlimited Rice Stewardship Partnership. Purina is a longtime supporter of conservation and building healthy habitats for hunting, training and field trials, and shares with Ducks Unlimited a commitment to outdoor enthusiasts who are passionate about their sports and their canine companions. Purina Pro Plan is the official performance dog food of Ducks Unlimited.

Purina Pro Plan has recently launched Veterinary Supplements Calming Care. Containing a strain of beneficial bacteria, Bifidobacterium longum BL999, Calming Care has been shown to help dogs maintain calm behavior.

Calming Care helps dogs cope with external stressors like separation, unfamiliar visitors, novel sounds, and changes in routine and location. It helps support dogs with anxious behaviors such as excessive vocalization, jumping, pacing, and spinning. During stressful events, Calming Care helps dogs maintain positive cardiac activity. It also promotes a positive emotional state and healthy immune system in dogs.

Purina Pro Plan Veterinary Supplements Calming Care is available through veterinarians and should be fed under the supervision of a veterinarian. If you have concerns about your dog’s behavior, you should talk to your veterinarian.

To learn more, visit: https://bit.ly/2Uhknnde
PURINA PRO PLAN OFFERS FORMULAS THAT DELIVER PERFORMANCE NUTRITION

Performance factors typically tip the scale when it comes to choosing the best food to feed an individual dog. Does the food in your dog’s bowl provide the nutrition and energy needed to power up an elite show dog or top sporting dog?

“There will never be a universal food that works for all dogs,” says Purina Research Nutritionist Christina Petzinger Germain, PhD. “It’s different when you are feeding an athlete or a show dog. It’s best to determine a dog’s energy needs. Other than water, energy is the most critical part of a dog’s diet.”
Energy fuels a dog's performance at field trials and athletic competitions. When a dog food provides the right levels of energy nutrients — carbohydrate, fat and protein — a dog is more likely to achieve a high VO₂ max, or maximal oxygen uptake. When maximal oxygen uptake combines with maximal fat oxidation, it produces the best performance during hard work.

“The higher the VO₂ max, the more intense a dog can exercise and the longer it can maintain a higher running speed,” Dr. Petzinger Germain explains. “This is due to the supply of energy from fat to the muscles, sparing the liver and muscle glycogen stores, and the body's use of amino acids, or protein, to provide glucose and delay fatigue. The longer you can spare glycogen, the better.”

Glycogen, the storage form of glucose in muscles and liver, is needed during intense work. However, it is limited in the body, and its depletion may affect a dog’s performance or capacity to work optimally. When glycogen stores are fully depleted, this leads to exhaustion.

A diet that is high in protein promotes high-circulating red blood cells, which have a crucial role in carrying oxygen to the cells, including muscle cells where oxygen is used to burn fat to produce the energy needed by a dog during work. Increased oxygen in muscle cells results in the increased capacity of the muscles to use fat as an energy source.

Fat is an important concentrated source of energy. The gross energy of fat equals 9 kilocalories compared to 4 kilocalories for both protein and carbohydrates. The digestibility of fat is generally higher than protein or carbohydrates, and fat is highly palatable and impacts the texture of dog food.

Ever wonder how kilocalories compare to Calories in human food? They are the same, except on human nutritional labels, kilocalories are shorted to Calories. Both represent the amount of heat required to raise the temperature of 1 kilogram of water 1 degree Celsius.

“During recovery, particularly at a field event where a dog may run multiple times in one day, glycogen stores are replenished via carbohydrates in the diet,” says Dr. Petzinger Germain. “Dietary carbohydrates are important, because they help maintain glycogen stores, enabling repeated episodes of exercise and work on a long-term basis.”

Understanding energy balance and determining whether your dog receives the nutrition he or she needs can be as simple as evaluating the dog's performance. Does your dog perform optimally with energy, drive and enthusiasm?

To help you understand what to look for in a dog food, here is a review of three Purina Pro Plan formulas rated highly among show and sporting competitors. Experts share their points of view about what makes them ideal foods in their dogs' bowls.

**PURINA PRO PLAN SPORT PERFORMANCE 30/20 SALMON & RICE FORMULA** — At a Glance —

Made for All Life Stages
496 Kilocalories Per Cup
Real Salmon Is the No. 1 Ingredient
30 Percent Protein/20 Percent Fat

Purina Pro Plan SPORT Performance 30/20 Salmon & Rice Formula is made with salmon as the No. 1 ingredient. Protein is a key source of energy and also important for growth and development. With 30 percent protein, this performance formula helps build and maintain lean muscle mass, including during the crucial time immediately after exercise. The concentrated nutrition of this formula helps to optimize oxygen metabolism, VO₂ max, for increased endurance. This performance food for hardworking dogs contains EPA, an omega-3 fatty acid, and glucosamine to help support joint health and mobility. Omega-6 linoleic acid promotes healthy skin and coat. The antioxidant-rich nutrition of this formula nourishes a dog's immune system and helps defend against free radicals.

**LOOKING FOR A SMALL EDGE**

In the highly competitive sport of retriever field trials, a small edge could make a sizeable difference. Mike Lardy, owner and head trainer of Handjem Retrievers in Montello, Wisconsin, was seeking a small edge when he switched his entire kennel to Purina Pro Plan SPORT Performance 30/20 Salmon & Rice Formula in 2014.

“Because I have performance dogs, I am always looking for little things that might help them compete better and be healthy for a long time,” says the record-setting seven-time winner of the National Retriever Championship. “The benefits of this food that sold me are its omega-3 fatty acids from fish oil and high digestibility.”

Professional retriever trainer Mike Lardy is about to send a Golden Retriever.
A TOP-NOTCH PERFORMANCE FOOD

Flyball competitor Mary Fuller of Catawissa, Missouri, has raised six generations of Border Collies on Purina Pro Plan SPORT Performance 30/20 Chicken & Rice Formula. “Purina Pro Plan has always worked for me,” she says. “My dogs have ideal muscle condition, endurance, hair coat, and stool. They are incredible athletes.” Fuller and her Sneak Attack flyball team has won a U-FLI (United Flyball League International) National Championship and earned more than 300 titles. The retired Purina Pro Plan nutritionist who worked for Purina for 39 years says, “The intense running and jumping in this sport requires a top-notch performance food to sustain the dogs’ energy. This is why Purina Pro Plan works so well for me.”

PROMOTING HEALTHY SKIN & COAT

Professional terrier handler Gabriel Rangel* of Rialto, California, works hard to condition the coats of his terrier Specials. As part of the regimen, he feeds them Purina Pro Plan FOCUS Sensitive Skin & Stomach Salmon & Rice Formula, because the food helps his dogs have a healthy skin and coat and ideal body condition.

“This Purina Pro Plan formula has the right combination,” says the two-time Westminster Kennel Club Best in Show winner. “Some dog foods are too rich, but this food provides balanced nutrition and the right nutrients that do not dry out the coats. Our dogs love the food.”

*As a Purina ambassador, Rangel receives Purina Pro Plan dog food.
AGILITY PRO, ‘NANUK,’ A SIBERIAN HUSKY, IS OWNER’S FIRST DOG

Rusty Boone never dreamt that a walk around the block with his dog would lead to “Nanuk” (MACH5 Boone’s Nanuk Of The North MXB2 MJS2 NJP XF T2B CGCA CGCU) becoming the No. 1 Master Agility Champion (MACH) Siberian Husky.

In a roundabout way, that’s exactly what happened.

“I was living in downtown Atlanta close to where I worked,” Rusty says. “At lunchtime, I would go home to take Nanuk out. One day a coworker, Jenn Rast, saw us walking. She has four Siberian Huskies that she trains for agility. She said, ‘You should try agility with Nanuk.”’

Rast guided Rusty to agility trainer Anne Jones at Alchemy Dog Training in Acworth, Georgia, where they enrolled in the puppy obedience class, followed by the foundation agility class. Playful training games taught Nanuk how to move and turn with Rusty. He began learning to focus and be attentive when other dogs were moving and running. Obstacles, such as a lowered A-frame, weave poles, open tunnels, and a lowered dog walk, helped to build confidence as well as balance and coordination.

“We were just getting our feet wet, but class by class, he excelled and showed interest, and week by week, he kept getting better and better,” Rusty says.

In November 2014, they competed in their first agility trial in Perry, Georgia. Braving new handler jitters, Rusty says, “The trial atmosphere was completely different than practice. We were at a fairgrounds with a dirt floor, lots of smells, and lots of people and dogs. In the middle of our first run in Novice A Standard, Nanuk escaped out of the ring and then out of the building.

My stomach dropped. I finally got him to come back using food to bait him.

“Over the four-day trial, we got one Q (qualifying score) in Novice Jumpers. Despite the distractions, he always kept his attention on me for a few obstacles, and he consistently came back to me after losing focus. That was a good thing.”

In July 2015, Rusty’s job transferred him to his hometown of St. Louis, Missouri. Rusty and Nanuk began training in the Master Agility class at Dog Sports at Kim’s (DSK) in Caseyville, Illinois, taught by Kim Berkley.

The team began fine-tuning their competitive skills. Berkley helped Rusty train Nanuk on the 2-on/2-off method in which a dog learns the proper contact zone on the A-frame, dog walk and teeter by practicing holding the front feet on the ground and the rear feet on the obstacles before exiting. They learned how to maneuver front, blind and rear crosses in which Rusty used different cross patterns to change sides with Nanuk. The energetic Siberian Husky was beginning to master the fast-action, in-and-out concept of weave poles and understand the game of agility.

Simultaneously while training with Berkley, Rusty enrolled in Joan Meyer’s handling class at DSK. Under Meyer’s tutelage, “Nanuk,” a 5-year-old white male Siberian Husky, practices jumps with owner-handler Rusty Boone of Imperial, Missouri. Nanuk earned his fifth MACH (Master Agility Champion) title last fall at the Siberian Husky Club of America National Specialty, becoming the first dog in breed history to earn a MACH at the National.
he learned how to effectively use hand signals and body language to guide Nanuk’s runs. “We became more consistent in our performance and began competing in trials more,” says Rusty. “After we got our contacts down, we went to the regular Open and Excellent classes.”

Over the 1 ½ years they trained at DSK, Rusty and Nanuk earned their Novice (NA, NAJ), Open (OA, OAJ), and Excellent (AX, AXJ) agility titles. They also advanced to the Master agility level in the spring of 2016, a fast progression from their start in Novice A in 2014.

Now, they were working on earning the lofty MACH title. Doing so would require achieving 750 speed points on the Standard course, one of the toughest to master with 18 to 20 contact obstacles such as the A-frame, dog walk and teeter, plus 20 Double Qualifying (QQs) points. Earning a QQ requires qualifying on the same day in the Standard and Jumpers with Weaves classes. The Jumpers with Weaves course includes up to 16 jumps plus weave poles and tunnels.

In July 2016, when he was only one QQ away from his MACH title, Nanuk injured his shoulder. The injury required three months of rehabilitation involving 10 biweekly cold laser treatments.

Nanuk lost confidence during the time off. “When he did the weave poles, he would pop out, which slowed his time. It was as though he remembered getting hurt. After a couple of trials we were back to working as a team,” Rusty says.

At a trial in Columbia, Missouri, in November 2016, Nanuk and Rusty earned the long-coveted MACH title. Rusty grabbed the last bar Nanuk jumped over, and they joyously ran around the ring in celebration.

One month later, Nanuk and Rusty took part in the AKC Agility Invitational in Orlando, Florida. There were 172 dogs competing in the 24-inch class. Nanuk and Rusty took fourth place, and Nanuk earned the breed medallion as the top-scoring Siberian Husky at the Invitational.

“This was my first big dog show with my first agility dog, and it was nerve-wracking,” Rusty says. “There’s a warmup and four rounds – Jumpers with Weaves, Standard, Hybrid and another Jumpers with Weaves – then the dogs with the highest average scores advance to the Finals. Nanuk came through with fast, clean runs.”

In January 2017, Nanuk and Rusty started working with Jennifer McDonald at Topshelf K9 Agility Training in Gray Summit, Missouri, signing up for her advanced handling competition class. “She has taken me to another level of handling and helped us to be more consistent,” he says. “My ground speed is much faster and my handling is tighter. Importantly, she has reinforced the importance of positive reinforcement and ample use of praise in training.”

Having earned three MACH titles, Nanuk and Rusty began a new pursuit in 2018. “I set goals for our team to achieve every year, and this year it was to try and earn MACH5 at the Siberian Husky National,” Rusty says. “In mid-June, Nanuk got MACH4. I looked at the number of trials being offered to see if it was feasible. It was.”

The agility trial was held the first day of the 2018 Siberian Husky Club of America National Specialty in St. Charles, Illinois. Nanuk and Rusty entered all six agility events offered at their skill level: Master Standard and Jumpers with Weaves; Premier Standard and Jumpers with Weaves; and two games, Fast and Time to Beat.

“Our first run was the Fast game, where you make up your own course and try to run through the obstacles in 32 seconds. We missed a jump and didn’t qualify,” Rusty says.

After the Fast game warmup, Nanuk and Rusty qualified in the Master Standard course. Jumpers with Weaves came last, and Nanuk was tired, but still qualified, earning Double QQs.

Easing through a jump tire, Nanuk focuses on Rusty for direction. The No. 1 MACH Siberian Husky in 2018, Nunuk is named for the polar bear mascot, Nanook, of the University of Alaska in Fairbanks, where Rusty went to college.

“He ran fast and clean and got MACH5,” says Rusty. “We also earned High in Trial, which we had never done before.”

It’s been a fast track for Nanuk and Rusty, earning five MACH titles in only three years, especially considering that Rusty had never trained a dog or competed in the sport. To top off the success of the year, Nanuk was the No. 1 MACH Siberian Husky, netting a first-round invitation to the 2018 AKC Invitational.

“It’s been bittersweet earning Nanuk’s MACH titles, since he’s my very first agility dog,” Rusty says. “A big part of our success has been the really good trainers behind us. They are definitely the foundation of our success. Importantly, I’ve learned that if you put in the time and train, you’ll get the results you want.”
The highly contagious canine reproductive disease brucellosis is alarming to dog breeders. Rightfully so, considering that the bacterial disease can wipe out an entire kennel, causing devastating emotional impact and economic losses. Considered a lifelong infection, brucellosis does not respond to treatment.

Dog breeding kennels provide a perfect environment for an outbreak, as dogs can contract the *Brucella canis* bacterium through ingestion, inhalation or contact with infected semen, vaginal secretions, saliva, nasal secretions, and urine. Contaminated objects, including food or water bowls and bedding, also are a source for infection.

Although few prevalence studies have evaluated disease occurrence in the U.S., experts say brucellosis is of increasing concern due to the increasing numbers of infected dogs seen by veterinarians as well as the potential threat posed by importation of infected breeding dogs and semen for artificial insemination. Besides affecting dogs, brucellosis is a zoonotic disease that can make people sick, particularly those having contact with infected dogs and their body fluids.

Brucellosis is a challenging disease to diagnose partly because the clinical signs resemble other diseases, thus it is sometimes called “The Great Imposter.” Misdiagnosis and underdiagnosis are presumed to be common. Meanwhile, the disease can quickly spread throughout a kennel.

Veterinarians diagnose brucellosis based on clinical suspicions followed by blood tests, such as the commonly used RSAT (rapid slide agglutination test). Accurate blood testing is diminished in chronically infected dogs, because the bacterium can be intermittent and because dogs treated with antibiotics may test negative despite having *B. canis* infection, making it a diagnostic challenge in some cases.

Treatment consisting of neutering, appropriate antibiotics and pain relief is not a panacea for brucellosis. Recovery is very poor, and it is extremely difficult to eradicate from an affected kennel.

### Signs of Brucellosis

Sadly, many dogs infected with *B. canis* do not develop typical clinical signs of brucellosis, and thus it can be months before it is diagnosed. During this time, they may intermittently shed low concentrations of the bacteria in their semen, vaginal secretions, saliva, nasal secretions, and urine, potentially infecting other dogs and humans. Reproductive failure is the red-flag sign of brucellosis. Other signs of this devastating disease are:

- Mid- to late-term abortion during days 45 to 59 of pregnancy, followed by an odorless brown-to-yellow vaginal discharge for one to six weeks
- Embryonic death with resorption, appearing as conception failure after an apparently successful mating
- Epididymitis (inflammation of the epididymis tube at the back of the testicle), prostatitis (swelling and inflammation of the prostate gland), and orchitis (inflammation of one or both testes)
- Neurological or spinal disease, such as discospondylitis, causing severe back or neck pain
- Puppies infected in utero or through nursing may appear healthy yet harbor the *B. canis* bacterium, or may be weak and die shortly after birth
The AKC (American Kennel Club) Canine Health Foundation recognizes brucellosis as a top infectious disease health concern. Here is a review of two funded research studies focused on learning more about the disease.

**DOES KENNEL COUGH VACCINATION HINDER BRUCELLOSIS DIAGNOSIS?**

A six-year study at the University of Minnesota investigated whether dogs vaccinated against kennel cough falsely test positive for brucellosis using the most common screening test, the rapid slide agglutination test (RSAT). “We vaccinated dogs against *Bordetella bronchiseptica*, and then drew blood samples at six- and eight-week intervals after vaccination. We discovered that dogs did not exhibit false positive reactions due to having the kennel cough vaccine,” says lead investigator Christina Larson, DVM.

Go to study online: https://bit.ly/2Ucnljw

**BRUCELLOSIS VACCINE FOR DOGS**

A research team at Texas A&M University led by assistant professor Angela Arenas-Gamboa, DVM, PhD, DACVP, is working on a vaccine to protect dogs from brucellosis. “We have developed the vaccine candidate, and we are determining if the vaccine is capable of inducing an adequate immune response and is safe for dogs including pregnant animals,” she says. A protective vaccine against brucellosis has the potential to significantly impact canine and human health by limiting the spread of *B. canis*.

Go to study online: https://bit.ly/2Qwsl37

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**TIPS FOR BREEDING KENNELS ON DISEASE PREVENTION**

**Annual screening tests are advised, and dogs bred outside your kennel should be tested two to four times a year.**

**Artificial insemination (AI) is the safest way to breed your stud dogs to outside bitches, with the semen shipped to the outside kennel. When breeding your bitches to outside stud dogs, use semen from stud dogs tested and proven negative for *B. canis*.**

**Quarantine all new dogs until they receive two negative brucellosis screening tests performed 30 to 60 days apart. The best practice is not to allow dogs into your kennel until they have been tested for brucellosis.**

**Consult a veterinarian for disease risk assessment and outbreak management if dogs in your kennel have been infected with *B. canis*.**

Smiling, Rebecca Cross sizes up a 14-week-old black female Scottie puppy stacked on a grooming table. Cobby-bodied with bushy eyebrows and a wispy, growing beard, she is one of three potential show dogs out of a granddaughter of the 2015 Crufts Best in Show winner, "Knopa" (INTL/RUS/AM GCH McVan’s To Russia With Love), whom Rebecca handled to international fame besting 21,500 dogs.

Choosing the “keeper” is an exercise in nitpicking. All three are lovely, requiring a tougher test. They are turned loose in the fenced exercise yard with Rosie. The bubbly, fun-loving 4-year-old daughter of Rebecca runs, cuddles and tumbles with the terriers, as her mom and grandmother, Dorene Cross, watch the interactive play. One spirited puppy stands out.

Longtime friends of Dorene and Rebecca and the litter’s co-breeders, Helen and Norman Prince of Princescot Scotties in Maryland, raised the puppies and have brought them to the Beameups Scottish Terrier kennel in Gettysburg, Pennsylvania.

“Rebecca is a perfectionist,” says Helen, president of the Scottish Terrier Club of Washington, D.C.
“She takes seriously things others may not. These are all nice puppies, but she is parting the sea, looking for the best.”

“Puppy C will stay here,” says Rebecca, scooping up the rowdy Scottie. “She is smaller, more compact and lower to the ground. She has a bigger, longer head. She’s also more reactive.”

Wearing a pink grooming apron monogrammed with her name, a favorite color and perhaps a symbol of girl power, Rebecca has an eye for picking show dogs. Feisty terrier temperament turned on in a show ring becomes a dog “on fire,” one that commands your attention, she knows.

With a temperament similar to the independent, bold terriers she shows, Rebecca has blazed a trail to the top with important international and specialty wins. Besides taking Best in Show at Crufts with Knopa, Rebecca handled the bitch to Best of Breed at the 2013 and 2014 Montgomery County Scottish Terrier Club of America (STCA) National Specialties and at the 2015 Westminster Kennel Club show.

Rebecca’s status as a world-class competitor was recognized again when she won Best in Show at the 2018 Benelux Winner World Dog Show in Amsterdam with “Bopper” (BIS/Multi-BISS GCH McVan’s Big Bopper At Beameups). Months earlier at the largest all-breed dog show in the world, Bopper won the Terrier Group at Crufts in Birmingham, England.

Only two months after the World Dog Show, after being stripped and growing a new coat, an amazingly quick turnaround for terrier coat, Bopper won Best of Breed at the Montgomery County STCA National Specialty under esteemed terrier judge Bergit Coady Kabel. It was his third STCA National Best of Breed, having won the Montgomery County National in 2017 and the roving National in April 2016.

“I was praying we could pull it off,” says Rebecca. “I spent a lot of time brushing Bopper’s topcoat with a boar bristle brush to stimulate the natural oils in the coat.”

Bopper and Knopa are closely related to “Max” (AM/JAP/SWE CH Land Rose R. JP All Right), whom Rebecca bought while living in Japan and imported to the U.S. He became an important sire of the Beameups’ breeding program, producing 26 show champions. Max is the maternal grandsire and paternal great-grandsire of Bopper and the sire of Knopa, who is Bopper’s aunt.

Taking in the puppy excitement from outside the fence is Dorene. She began Beameups Scottish Terriers 40 years ago.

As described in the Scottish Terrier breed standard, the original, dyed-in-the-wool, simon-pure Highland terrier is a rugged, sturdy dog bred to go to ground hunting badgers, fox and vermin. The Scottie is the only breed that has lived in the White House two times, with Presidents Franklin D. Roosevelt and George W. Bush. A popular breed, the Scottie ranks 58th among the 190 breeds recognized by the American Kennel Club.

Beameups Scottish Terrier breeder and professional handler Rebecca Cross loves helping others learn how to care for their terriers’ coats, including doing the tedious finish work. In her “Rebecca Cross Grooming Seminar for Scotties and Westies,” held once or twice a year, she offers hands-on training and tips for owners. These are an offshoot of grooming seminars Rebecca presented in conjunction with Scottish Terrier clubs in the U.K., Italy, Greece, and Denmark when living overseas.

Here are some of Rebecca’s best practices:

- For starters, you must feed your dog properly. High-energy terriers require optimal nutrition. At Beameups, we feed our Scotties Purina Pro Plan SPORT Performance 30/20 Chicken & Rice Formula blended with Purina Pro Plan FOCUS Sensitive Skin & Stomach Salmon & Rice Formula.
- Exercise and fresh air are important to reduce the risk of a terrier becoming overweight.
- Developing a terrier coat takes patience and hard work, as it involves a lot of pulling and stripping of the wiry topcoat. It generally takes 12 weeks for a new terrier coat to grow in — eight weeks for the dead coat to fall out and four weeks for new growth to come in.
- Be careful of wet environmental conditions, which can blow a coat by opening it up. Likewise, the heat and humidity of summer can dull a terrier’s coat.
starting with pet-quality Scotties and gradually producing star-studded show dogs. Dorene’s passion for breeding and showing this most ancient breed of the Scottish Highland terriers is contagious.

“Becca has a talent that can’t be taught,” says Dorene. “She knows what it takes to make a dog look better and transform it to a great dog. She has a competitiveness and nerves of steel. The harder it gets, the more she loves it.”

Picking up Puppy A and Puppy B, assistant Meri Tanskanen of Vihti, Finland, is soon to finish her third apprenticeship working for Rebecca at her show kennel. They met when Meri was working for Veli-Pekka Kumpumäki of Perhaps Scottish Terriers in Helsinki, and Rebecca was in Japan.

Kumpumäki had sold a black Scottie named “Marco” (INTL/AM CH Perhaps Sugardaddy) to Japanese breeder and pro handler Hiroshi Tsuyuki of Tokyo, with whom Rebecca was working. She and Dorene became co-owners with Tsuyuki of the standout male who was Rebecca’s biggest winner in 2006 when he took Best of Breed at the Montgomery County Scottish Terrier Club of America National Specialty.

Being rugged and persistent has earned the Scottie the nickname “Diehard.” In many ways, Rebecca conveys diehard determination. “It still amazes me Becca picked this career and stuck with it,” says Dorene.

Facing life’s forks in the road with clarity and purpose, Rebecca has achieved many milestones. Stubbornness has gone a long way in helping her earn the wins she believes her dogs deserve. “The world needs to see this dog!” she often says exuberantly.

STARTING OUT IN ALASKA

Sled dogs were a way of life in Salcha, Alaska, where Brian and Dorene Cross lived in the 1980s and ’90s, bringing up their only child, Rebecca Sarah Joy Cross. They had retired sled dog racers and used them to haul water and supplies, which was particularly helpful during the long weeks when Brian was working on the Trans-Atlantic Pipeline System.

“We had a 3-acre homestead on which I raised much of our food, growing cabbage, carrots, beets, and potatoes,” Dorene says. “Brian hunted moose and deer and fished for salmon and halibut.”

Dorene grew up with a Scottish Terrier and longed to get another. When she found a female Scottie available from a breeder in Oregon, she bought the dog and entered a show. She did not know about conditioning and stripping the coat or training the dog in conformation.

“I went to the Tanana Valley Kennel Club show in Fairbanks (Alaska) Memorial Day weekend 1985,” recalls Dorene. “There were four women showing Scotties. I realized, wow, my dog doesn’t look like that. The judge told me I probably wanted a better dog for showing. I decided then and there I wanted to do this.”

An early mentor, Irene McCauley of Wasilla, Alaska, began teaching Dorene what it takes to develop a show Scottish Terrier. She helped her understand how to strip the hard, wiry coat and groom the legs and lower body furnishings.

Meanwhile, the hunt for a show-quality Scottish Terrier proved challenging. “No one wanted to sell a quality dog,” says Dorene. “I saw an ad in Dog World in 1990 for a 3-year-old retired AKC champion. He was being sold because the owner had too many males. I just loved him so much.”

Dorene began training her new male in obedience. “He loved to heel, though he would not retrieve,” she says. “I put CD (Companion Dog) titles on him in four registries.”

Rebecca holds Bopper, left, and “Alex” (CH Tamarin Trebeck), a 1½-year-old male Affenpinscher, and assistant Meri Tanskanen is shown with “Bruno” (GCH Magic Bruno Banani Vom Maerchengarten), a 3-year-old male West Highland White Terrier.
Proud of his obedience accomplishments, Dorene put an ad in *The Bagpiper* promoting “Flood” (CH Anstamm Flash Flood CD). Although she was unaware, Flood was well-bred. He came from the Anstamm Scottie line of Cindy Cooke and Miriam “Buffy” Stamm.

Dorene now wanted a Scottie bitch to breed to Flood, which she found through Phyllis Selby Dabbs of Stonecroft Scotties in California. Dabbs introduced Dorene to show handler Bergit Coady Kabel of Bonnie Briar Kennels in Sun Valley, California. This led to Dorene getting “Tasha” (Stonecroft’s Black Watch UD).

“Tasha didn’t like conformation, but she loved obedience,” Dorene says. “She was so good at retrieving, probably because she was brought up with Labrador Retrievers.”

Dorene bred her first litter, a cross between Flood and Tasha. “They taught me how hard it is to breed show dogs and that I had a lot to learn,” she says.

Rebecca was getting involved in junior showmanship, going to Monday night conformation class with her mom. “My first junior dog was a Labrador Retriever named ‘Crystal,’” Rebecca says. “I didn’t like the Scotties as much as the bigger dogs, but I did the most winning with them. Beameups Black Mr. Spock out of mom’s first homebred litter was the worst show dog, but we did well.”

Although Dorene’s first litter did not bring her the ring success she wanted, she was meeting terrier enthusiasts by going to shows in Oregon and California. In the late 1980s, Dorene met Dr. Vandra Huber of McVan Scotties in Woodinville, Washington, a business professor at the University of Washington who would become a mentor. Their mutual love of the breed led to many collaborations, including Knopa and Bopper.

The Scottie world lit up with excitement when a 4-year-old black bitch Vandra owned, bred by Camille Partridge, won Best in Show at the 1995 Westminster Kennel Club show. Handled by Maripi Wooldridge, “Peggy Sue” (Multi-BIS/Multi-BISS AM/CAN CH Gaelforce Post Script) also made a mark as the all-time top Specialty-winning Scottie, with 21 Bests in Specialty Show, including a record six STCA National wins.

“Vandra helped me find a bitch puppy from her lines,” Dorene says. “She also helped me finish the dog. When I bred the dog, Vandra would get to pick a puppy.”

The black brindle bitch out of the McVan bloodline was named “Nugget” (CH Victoria’s Alaskan Gold NAJ). Whelped in 1998, she came from Al Alaniz (Victoria’s Scotties) of Yucaipa, California. Nugget’s sire, “Trevor” (AM/CAN Multi-BISS CH McVan’s Canned Heat), was a top-winning Scottie who won the breed at Westminster at 13 months of age handled by Maripi.

About this time, Rebecca came to a fork in the road. Having lived in Alaska all her life, when she graduated from high school, she was ready to see the world. “All the handlers in Alaska had jobs during the week,” she says. “Making a career of handling dogs never crossed my mind.”

In 1997, she joined the Air Force.

### A World’s Eye View of Showing Dogs

During her eight years in the Air Force, Rebecca worked as a computer operator, specializing in combat communications, and earned bachelor’s and master’s degrees in information technology. She spent time at air bases in Oklahoma City, South Korea, Germany, and Japan.

While in Germany, Rebecca got involved in Fédération Cynologique Internationale (FCI) shows, a registry recognizing 344 breeds. FCI shows gave Rebecca a different perspective about how dogs are judged and groomed, as dogs are shown strictly in their natural condition. She also found that European Scotties had more bone and substance than what she was used to, which would come to play in helping to balance her U.S. bloodlines.

In Germany, she befriended Martina Warner of Arabella Scotties. When Martina had a litter in 2001, Rebecca got a wheaten male named “Polo” (INTL CH Arabella’s Voyager). “We never would have gotten Knopa or her sister, ‘Betsy,’ if not for Polo,” Rebecca says.

Rebecca sent Polo to Dorene, who bred him to Nugget. When the litter was born in 2003, Vandra, who had helped Dorene get Nugget, chose “Anna Nicole” (AM/CAN CH Beameups McVan’s Gold Digger ROM) as her puppy back.

Vandra bred Anna Nicole to “Jimmy” (AM/CAN Multi-BISS CH McVan’s Light My Fire), whose maternal great-granddam was Peggy Sue. A bitch from that litter, “Carrie” (AM/CAN BIS/Multi-BISS CH McVan’s Firestarter), was bred to Max, producing Knopa and Betsy (BIS/BISS GCH McVan’s Be Bop Baby), two phenomenal Scottie bitches.

Rebecca, now stationed in Japan, began working with Hiroshi Tsuyuki, a pro handler who had trained seven years in the U.S.
with terrier pros Clay and Bergit Coady, as well as dog show icon Anne Rogers Clark and terrier great Ric Chashoudian. "Hiroshi was my biggest mentor," Rebecca says. "He took me to a whole different level, teaching me about blending, conditioning, bathing and blow drying the coat, and finish trimming. I learned to be consistent."

Handling dogs part time under Sarahjoy professional handling, Rebecca made history in Japan. Polo, her own dog from Germany, set a record as the first wheaten Scottish Terrier to win Best in Show in Japan. She campaigned another wheaten, "Goldie" (Multi-BIS CH Beameups Solid Gold), a sister of Anna Nicole, winning five Bests in Show and handling her to No. 1 Terrier and No. 5 in all-breed rankings.

When Rebecca moved back to the states in 2008, she settled in Glen Burnie, Maryland, close to Fort Meade and her job as a civilian military contractor. Showing dogs on the weekends, she kept up her international contacts. She also stayed active in FCI shows, particularly Crufts and the World Dog Show. Betsy and Knopa were among her stars; Betsy won the breed at the 2012 Crufts show, and Knopa won in 2013.

In 2014, Rebecca faced another fork in the road. Her contractor job ended after Rosie was born. She decided to go full time as a professional dog handler and bought a house in Gettysburg with a kennel in the back. Dorene moved in to help out.

"I had a couple of clients but no assistant," Rebecca says. "I figured I needed two clients to make my house payment."

By 2015, Rebecca had grown her business, taking in some of her best U.S. clients today as well as overseas clients who wanted AKC titles on their dogs. In March, Rebecca won Crufts with Knopa on the eve of her retirement after being campaigned in the U.S. to No. 1 Scottie in 2013 and 2014 and No. 3 Terrier in 2014.

"Knopa is a clone of Nugget," says Dorene. "I cried watching on TV. Knopa was on fire, showing so beautifully."

Rebecca recalls the thrill of winning. "Did this just happen?" she exclaimed to herself.

Betsy, too, was a major force in Scottie circles. She won 22 Bests in Specialty Show, passing Peggy Sue’s record to become the breed’s all-time top Specialty winner. Betsy was bred to “Drake” (CH Chyscott’s Behind The Mask), whose sire GCH Dynasty’s BR Donald Rockfeller, a Max son, won the Montgomery County STCA National Specialty Best of Breed in 2016.

Out of the Betsy-Drake litter came Bopper. Among his standout qualities, Bopper has the cobby body of his Best in Show mother Betsy and the long, clean head of his Crufts Best in Show aunt Knopa.

If all goes well, Puppy C, who spent her first night at Beameups snuggled next to Dorene, will exhibit some of those traits. Looking back at how far they’ve come, Dorene says, “I feel fortunate to have met the right people at the right time.”

In her stubborn way, Rebecca has been pivotal to the success of Beameups Scottish Terriers. She turns show rings on fire when she believes, “The world needs to see this dog!”
WHAT IF...

A PROBIOTIC COULD HELP YOUR DOG FEEL CALMER?

Introducing Purina® Pro Plan® Veterinary Supplements Calming Care with *Bifidobacterium longum* (BL999), a probiotic strain shown to help dogs maintain calm behavior. In a recent survey, 62% percent of dog owners report that their dogs regularly exhibit one or more behaviors that could be signs of anxiety.*

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**TALK TO YOUR VETERINARIAN ABOUT CALMING CARE TODAY.**

*Data was collected by Relevations Research via an online survey from August 15-19, 2018. A total of 626 nationally-representative dog owners qualified and completed the survey. Qualified participants were men and women age 18 and older, owned one or more adult dogs, were household members most responsible for taking the dog(s) to a veterinarian, and had taken the dog(s) to a veterinarian in the past 12 months. Purina trademarks are owned by Société des Produits Nestlé S.A.*
Attaining iconic status as a National Retriever Champion, three Labrador Retrievers powered up their best performances, going beyond talent and training, to win their respective Derby, Amateur and Open championship stakes in 2018. Designed to distinguish elite, fast-thinking, hard-charging retrievers, these weeklong championships, comprised of 10 challenging land and water tests and a Finals series, were an unforgettable, humbling ride on a journey to a job well done.

Consistent marking and quick retrieves translated to winning the National Derby Retriever Championship for “Pink” (NDC Seasides Got To Get Up and Try), an 18-month-old female handled by owner Robbie Knutson of Evans, Georgia. “She wasn’t perfect, but she did very well in all 10 series and the Finals,” says Knutson, who scored his biggest career win at the Derby National since going pro in 2015 with Jason Baker of Baker Retrievers in Washington, Georgia, after 13 years as an amateur. Proud to win, Knutson, has been the sole trainer of Pink, a gift from Frank and Rita Jones of Seaside Retrievers in Vernon, Florida. Held Oct. 8 to 12 in Sedalia, Missouri, the Derby National included 43 derby-age contenders.

Hard-driving enthusiasm solidified the National Amateur Retriever Championship win for “Croc” (NAFC-FC-AFC Steadfast’s Bachelor Special), a 5-year-old male handled by owner Monte Wulf of Blair, Nebraska. “Croc was cranked up at the start, but he calmed down nicely and settled in as the week went on,” says Wulf, who co-owns Croc with his wife, Pam Wulf. Earning his most prestigious win after 35 years in the sport, Wulf credits his achievement to the late Bill Eckett, of Blackwater Retrievers, a Hall of Fame member, who recognized the dog’s talent yet allowed Wulf to buy Croc, forgoing his own opportunity. The National Amateur, held June 16 to 23 in Roseburg, Oregon, had 99 amateur-handled retrievers.

Stylish and animated, “Google” (NFC-FC-AFC I’m Ur Search Engine) stood out to win the National Open Retriever Championship. The 5-year-old male, handled by pro Alan Pleasant of Black River Retrievers in Angier, North Carolina, is owned by Leon Stepanian of Manakin-Sabot, Virginia. “Google had an exceptionally nice trial all week long. He was perfect on all his marks,” says Pleasant, a two-time handler of a National Open winner, having also won in 2014 with “Bullet” (NFC-AFC Robber’s Stray Bullet). A pro retriever trainer for 35 years, Pleasant trained eight retrievers that qualified for this year’s National Open and handled two Finalists. With 105 retrievers competing, the National Open was held Nov. 10 to 17 in Paducah, Kentucky.

All three 2018 Retriever National Champions were fueled to their wins by Purina Pro Plan SPORT Performance 30/20 Chicken & Rice Formula.
The locomotion of the long, lean muscles of running Greyhounds is simultaneously elegant and breathtaking. Like other ancient sighthound breeds hardwired to pursue prey by speed and sight, the Greyhound has idiosyncrasies that include having a potentially life-threatening, slow recovery from anesthetic drugs.

Identifying gene mutations responsible for breaking down, or metabolizing, commonly used drugs in Greyhounds and other sighthound breeds is the focus of research underway at Washington State University. Lead investigator Michael Court, BVSc, PhD, professor and the William R. Jones Endowed Chair, says the goal is to develop a drug sensitivity test from saliva, urine or blood that will identify dogs with a slow drug metabolism of certain drugs.

“This would allow a veterinarian to make dose adjustments or select an alternative drug for optimal drug treatment,” he says. “A personalized or individual approach to drug selection would be the ideal outcome for affected dogs.”

A veterinary anesthesiologist who has worked in research since 1983, Dr. Court is revolutionizing a cocktail drug phenotyping approach to use in dogs that will enable several drugs to be tested at the same time to determine their metabolism ratio in the body. The test would produce results classifying a dog as a slow, normal or fast metabolizer for a specific group of drugs.

“The original problem drug in sighthounds was a barbiturate, thiopental, which is used to induce anesthesia,” Dr. Court says. “Greyhound owners in Australia and the U.S. reported that it took their dogs 48 hours to stand unassisted after having thiopental anesthesia. Although thiopental is no longer used in the U.S., its use continues in most of the world. The replacement drug in the U.S. is propofol, though even with this drug, recovery in Greyhounds can be double what is normal, taking 40 minutes instead of 20 minutes.”

Since all of the problem anesthetic drugs are highly fat-soluble, the sensitivity of Greyhounds and other lean-bodied sighthounds to these drugs was originally thought to result from a reduced ability of their tissues to “soak up” the drug, keeping it away from the brain. However, more recent work has implicated a reduced ability of the dog’s liver to break down and remove the drug from the body. Specifically, there appears to be deficiency of an important drug metabolism enzyme, called cytochrome P450 (CYP).

“Using a candidate gene approach to identify gene mutations in Greyhounds that decrease anesthetic drug metabolism, we found two mutations that may explain the slow metabolism,” says Dr. Court. “One is a mutation in one of the CYP (CYP2B1) genes, and the other is in a gene for an enzyme needed for CYP to work efficiently, called P450 oxidoreductase (POR). Together, these drug-metabolizing enzymes make the drugs more water soluble, so they can be easily flushed out through the kidneys.

“Both mutations are found primarily in Greyhounds and some sighthound breeds. Rarely in non-sighthound breeds.”

DEVELOPING A NOVEL DRUG SENSITIVITY TEST

The sighthound adverse drug reaction research, now in phase two, focuses on developing a cocktail drug phenotyping test. Funding of $172,765 for the two-year study that began in June 2018 is provided by the AKC (American Kennel Club) Canine Health Foundation. Phase one of the research, which ran from 2016 to 2018, received funding of $150,000 from the AKC Canine Health Foundation. This work involved functional studies of the mutations in the laboratory.

SIGHTHOUND OWNERS CAN CONTRIBUTE TO RESEARCH

Researchers at the Program in Individualized Medicine (PrIMe) at Washington State University are seeking DNA samples from sighthounds for two separate ongoing studies. One study is examining adverse drug reactions to anesthesia, and the other is investigating delayed postoperative bleeding. For information, go to https://prime.vetmed.wsu.edu or send an email to courtlab@vetmed.wsu.edu.

To read the abstract of the adverse drug reaction grant that is funded by the AKC Canine Health Foundation, go to: https://bit.ly/2FG1vjh. You also may donate to this research via the link.
“The AKC Canine Health Foundation is committed to advancing a future for personalized medicine for canine patients,” says Dr. Diane Brown, CEO of the AKC Canine Health Foundation. “We consider Dr. Court’s work in this area as an important series of first steps toward that future, and have dedicated funding to these efforts since 2016.”

Although the adverse drug reactions in sighthounds is similar to the MDR1 gene mutation in herding breeds that causes a neurotoxic reaction to ivermectin and other drugs (see below), there are differences. While the mutations in sighthounds dramatically reduce the function of the enzymes, they do not wipe them out, as occurs with dysfunction of the P-gp transporter protein in herding breeds.

“These are two different processes with the same goal, essentially trying to limit the amount of a drug that gets into the body,” Dr. Court explains. “P-gp keeps drugs out of the body, and especially the brain, by pumping the drug out. Drug-metabolizing enzymes like CYP2B11 make drugs in the body water soluble, so they can be easily flushed out, usually through the kidneys. The slow metabolism also changes the drugs chemically so they often lose their effect.”

### MDR1 Gene Mutation in Herding Breeds Tied to Adverse Drug Reactions

The discovery in 2001 of a mutation in the MDR1 (multidrug resistance) gene in Collies and other herding breeds that causes a neurotoxic reaction to ivermectin, a parasitic preventive, provided insights into treating affected dogs. It also initiated the use of pharmacogenetics to determine how an individual dog’s genetic makeup impacts its response to drugs. Katrina Mealey, DVM, PhD, DACVIM, DACVCP, professor and the Richard L. Ott Endowed Chair in Small Animal Medicine and Research at Washington State University, identified a 4-base pair deletion mutation in the MDR1 gene that causes a stop codon prematurely terminating P-glycoprotein (P-gp) synthesis.

“The MDR1 gene encodes the P-gp transmembrane protein that functions in a protective capacity by transporting a variety of drugs from the blood-brain barrier into the body,” explains Dr. Mealey. “Dogs with the MDR1 mutation do not have this protective barrier. Thus, drugs like ivermectin can cause toxic reactions that result in debilitating illness and even death.”

In the affected dogs, high concentrations of ivermectin accumulated in their brain tissue after a single dose of the drug. Since ivermectin is processed from the brain through P-gp into the body, Dr. Mealey hypothesized that ivermectin-sensitive collies had altered MDR1 gene expression.

Her research led to the MDR1 gene mutation discovery and development of a genetic test that is available through the Veterinary Clinical Pharmacogenetics Laboratory at Washington State University (www.vcpl.vetmed.wsu.edu). A DNA cheek swab test that identifies a dog’s phenotype for the mutation can be ordered and processed for $60.

The autosomal dominant gene mutation impacts homozygous and heterozygous affected dogs. Dogs that are homozygous inherit two copies of the mutant allele and pass one copy of the defective gene to their offspring. Homozygous dogs are more likely to have severe, life-threatening drug reactions.

Affected dogs that are heterozygous have one copy of the mutant allele and one copy of the normal allele, meaning they have a 50 percent chance of passing the defective gene to their offspring. These dogs have less severe adverse drug reactions compared with those that are homozygous.

The MDR1 mutation primarily occurs in herding breeds. Affected dogs are thought to be descendants of a single dog that lived in Great Britain in the early 1800s before breeds were selectively bred. The mutation also occurs in two sighthound breeds, the Longhaired Whippet and Silken Windhound, believed to share a collie ancestry. Mixed breeds — any dog with a herding breed in its ancestry — may be at risk for drug toxicity.

“As a pharmacologist, the most fascinating aspect of the MDR1 gene mutation is the sheer number of drugs that are affected by a single gene mutation,” Dr. Mealey says. “Not all drugs must be avoided in dogs with altered P-glycoprotein function. Many drugs can be used safely with no need to alter the dose.”

However, adverse drug reactions involve over a dozen different drugs. The most serious adverse drug reactions involve antiparasitic preventives, such as ivermectin and milbemycin, the antidiarrheal medication loperamide (Imodium®), and several anticancer drugs, including vincristine and doxorubicin.

Since the genetic test was first offered in 2004, there has been a reduction of the mutation in some breeds via selective breeding. Importantly, identifying dogs with the P-gp dysfunction allows veterinarians to decrease the drug dose or consider alternate drugs to avoid a potentially fatal drug reaction.
which means he may experience postoperative bleeding problems."

A separate study of delayed postoperative bleeding, funded in part by the Scottish Deerhound Club of America, is underway in conjunction with the anesthesia research. The team is seeking DNA samples from sighthounds that experienced delayed bleeding 24 to 72 hours after surgery, as well as DNA from littermates of dogs that died from this condition.

The cocktail drug phenotyping research involves testing 12 dogs with three drugs to evaluate their rate of metabolism. "The drug cocktail includes an antidepressant, which we believe will be metabolized slowly in dogs with the mutation, because it is only metabolized by CYP2B11," Dr. Court explains. "The other drugs are an over-the-counter acid reducer and a cough suppressor. These latter two should be metabolized normally in dogs with the mutation because they are metabolized via other CYP enzymes."

Currently, the research team is working to ensure that the three drugs can be safely given at low doses together without interfering with one another. They also want to be sure the saliva concentrations of the drugs and metabolites match the blood and urine concentrations so that saliva can be used for the test.

"The power of this approach is that we can readily test hundreds of dogs," says Dr. Court. "Once we have this cocktail phenotyping test worked out, then we plan to use it in dogs with and without the mutations to show that the metabolism of the CYP2B11 enzyme is slow, but metabolism of the other CYP probes is normal."

"Ultimately, owners could perform a saliva test at home that would determine the ability of individual dogs to handle drugs that could be affected by rare mutations, even those not yet discovered," he says. "The impact of non-genetic factors, such as age, disease, diet, and environment, on drug metabolism would also be detectable by this novel drug sensitivity test."

"I hope that owners of sighthounds will not have to worry when their dogs need to undergo necessary medical procedures," Dr. Martinez says. "The potential of being able to proactively customize drugs used for anesthesia for individual dogs to reduce the risk of slow recovery or identify a dog that is prone to a fatal bleeding problem and ensure they get lifesaving drugs is exciting."

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### BREED FREQUENCY OF MDR1 GENE MUTATIONS

<table>
<thead>
<tr>
<th>Breed</th>
<th>Approximate Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collie (Rough- &amp; Smooth-Coated)</td>
<td>70 Percent</td>
</tr>
<tr>
<td>Longhaired Whippet</td>
<td>65 Percent</td>
</tr>
<tr>
<td>Australian Shepherd</td>
<td>50 Percent</td>
</tr>
<tr>
<td>Miniature Australian Shepherd</td>
<td>50 Percent</td>
</tr>
<tr>
<td>McNab Shepherd</td>
<td>30 Percent</td>
</tr>
<tr>
<td>Silken Windhound</td>
<td>30 Percent</td>
</tr>
<tr>
<td>English Shepherd</td>
<td>15 Percent</td>
</tr>
<tr>
<td>Shetland Sheepdog</td>
<td>15 Percent</td>
</tr>
<tr>
<td>German Shepherd Dog</td>
<td>10 Percent</td>
</tr>
<tr>
<td>Herding Breed Cross</td>
<td>10 Percent</td>
</tr>
<tr>
<td>Mixed Breed</td>
<td>5 Percent</td>
</tr>
<tr>
<td>Old English Sheepdog</td>
<td>5 Percent</td>
</tr>
<tr>
<td>Border Collie</td>
<td>&lt;5%</td>
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1Veterinary Clinical Pharmacology Laboratory at Washington State University (www.vcpl.vetmed.wsu.edu)

### DRUGS AFFECTED BY THE MDR1 GENE MUTATION

<table>
<thead>
<tr>
<th>Drug Category</th>
<th>Drug</th>
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<tr>
<td>Analgesic/Sedative</td>
<td>Acepromazine, Butorphanol</td>
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<tr>
<td>Antibacterial</td>
<td>Erythromycin</td>
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<td>Antiparasitic*</td>
<td>Doramectin, Ivermectin, Milbemycin, Moxidectin, Selamectin</td>
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<tr>
<td>Chemotherapeutic</td>
<td>Doxorubicin, Vinblastine, Vincristine, Vinorelbine, Paclitaxel</td>
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<tr>
<td>Antidiarrheal</td>
<td>Loperamide (Imodium*)</td>
</tr>
</tbody>
</table>

*Note that giving dogs FDA-approved heartworm preventive products according to the recommended doses is safe, even in dogs with the MDR1 mutation.

1Veterinary Clinical Pharmacology Laboratory at Washington State University (www.vcpl.vetmed.wsu.edu)
PURINA AWARDS TOP ALL-AGE BIRD DOGS AND SHOOTING DOGS

In the highly competitive all-age and shooting dog horseback stakes, consistent winners with polished performances etch a place in history as recipients of Purina Awards. A celebration culminating the yearlong circuit, which spans numerous weekends and countless miles, was held in June in St. Louis, Missouri, to honor the 2017-2018 Purina Award winners.

An athletic 3-year-old white-and-orange male Pointer named “Mike” ruled the open all-age circuit to win the Purina Top Field Trial Bird Dog Award. Handled by pro Mark McLean of Moultrie, Georgia, Touch’s Mega Mike is owned by Eddie Sholar of Leesburg, Georgia, and Ted Dennard of Haddock, Georgia. “Mike is one of the most consistent bird dogs I have ever handled,” says McLean. “His style, range and supreme ability to find birds set him apart from the competition.” The standout bird dog placed in eight stakes, winning five of them.

Mike along with three other dogs on McLean’s string earned 15 placements in all-age stakes to give the pro his first Purina Top All-Age Handler Award after 30-plus years in the sport. Six months spent on the road, traveling 5,500 miles, paid off. “It’s an honor to win the Purina Handler Award,” McLean says. “This achievement has been a total team effort and wouldn’t have been possible without great dogs, owners and scouts, especially my son, Cody McLean, who have been a big part of my success.”

A fine-tuned 5-year-old white-and-liver female Pointer named “May” captured the Purina Amateur Top Field Trial Bird Dog Award under breeder-owner-handler Keith Wright of Covington, Indiana. “May stood out as a puppy and since then her consistency, intelligence and strong desire to find game have set her apart from the competition,” Wright says. Touch’s Firedancer placed in four amateur stakes, winning three of them. Wright also is the breeder of Mike, the Purina Top Field Trial Bird Dog.

A talented 2-year-old white-and-liver-ticked male Pointer named “Bill” won the Purina Derby Top Field Trial Bird Dog Award. Handled by pros Ike Todd of Somerville, Tennessee, and Luke Eisenhart of Albany, Georgia, Game Wardon is owned by his breeder, Dr. Fred Corder of Corinth, Mississippi. “Bill is a strong, consistent bird dog who is well-mannered around game. He has the endurance and natural ability to win field trials,” Dr. Corder says. Among the Pointer’s six earned placements was winning the 2018 Continental Derby Championship at Dixie Plantation in Greenville, Florida.

On the shooting dog circuit, a level-headed 6-year-old white-and-liver male Pointer named “Bolt” rallied to the top of the standings by winning six championships in three months at the end of the season to capture the Purina Top Shooting Dog Award. Handled by pro Shawn Kinkelaar of Effingham, Illinois, Chelsea’s Thunder Bolt is owned by Dr. Tom Jackson of Columbus, Indiana, and George Hickox of Ochlocknee, Georgia, and Bismarck, North Dakota. “Bolt is a natural bird finder with effortless endurance. He hunts independently, yet stays in sync with me,” says Kinkelaar, who has handled five different dogs to a
record-setting 10 Purina Top Shooting Dog Awards. Bolt was bred by Brad Sadler of Ridgeland, South Carolina.

Earning the most points in the history of the Purina Amateur Top Shooting Dog Award resulted in top honors for “Jack,” a 5-year-old white-and-liver male Pointer.Handled by owner Joe Rentz of Brooks, Georgia, Redland’s Jacked Up took nine placements, including eight wins. “Jack is an exceptional bird dog with a strong nose, the intelligence to hunt in the right places and the endurance to never quit. Jack aims to please,” says Rentz, who co-owns the dog with his wife, Tricia Rentz. This was the second Purina Award for the couple, having owned the 2015-2016 Purina Derby Top Shooting Dog, Rentz’s Fire and Ice, who was handled by Jeanette Tracy of Glenville, Pennsylvania. Jack was bred by Steve Nichols of Kingston, Georgia.

Natural talent netted “Bat,” a 2-year-old white-and-black male Pointer, the Purina Derby Top Shooting Dog Award. Pro handler Toby Tobiassen of Catskill, New York, describes Glassilaun War Paint as “a classy, talented and animated bird dog.” Bat captured eight placements, including four wins. Owner Jamie Nee of Quincy, Massachusetts, credits his late father, Denis Nee, to introducing him to bird dogs and field trials as a 10-year-old. “Glassilaun’ is Gaelic for ‘Green Island,’ the Irish village where my father grew up,” Nee says. “Bat is one of the best bird dogs I have seen in more than three decades.” John Neely of Albany, Georgia, is the breeder of Bat.

Winning his 13th Purina Top Shooting Dog Handler Award, George Tracy of Glenville, Pennsylvania, returned to the circuit after six months off for health reasons and secured his position at the top. Tracy commanded a string of 14 bird dogs that took 23 placements in field trials across the country. “To be competitive in this sport, a handler has to have the support of great dogs and owners. I have the best, and without them, I wouldn’t be accepting this award,” said Tracy, a Hall of Fame member. “I am grateful to win the Purina Award, which perpetuates the highest level of sportsmanship among those in this outstanding outdoor tradition.” Tracy also received a special honor, an engraved trophy recognizing his 200th field championship win earned in 2018.

Five of the six Purina Award-winning dogs are fueled by Purina Pro Plan SPORT Performance 30/20 Chicken & Rice Formula.
**SCOTTISH DEERHOUND ‘VIOLET’ IS WINNINGEST OWNER-HANDLED HOUND IN HISTORY**

With head-turning beauty and exquisite movement, a 6-year-old silver-gray Scottish Deerhound named “Violet” has tallied 38 Bests in Show in the AKC National Owner-Handler Series to become the winningest Hound in history. “Violet walks into the show ring as though she owns it. She’s a diva. It’s always all about her,” says breeder-owner-handler Shawny Cirincione, of Danbury, Connecticut. The No. 1 Scottish Deerhound in all systems in 2017 and 2018, Multi-BIS GCH Hobarra’s I Dreamed A Dream has been the top Deerhound in the Owner-Handler Series since 2015. Violet is co-owned by Anthony Cirincione, co-breeder and husband of Shawny Cirincione, and Terry Rizzitello, of Briar Cliff Manor, New York. A breeder of Scottish Deerhounds for 33 years, Cirincione credits her mentor, the late Helen Putrino of Glassonby Deerhounds in Australia, for her success. “If it weren’t for Helen, I would not have the Deerhounds I have,” she says. Putrino allowed Cirincione to breed her bitch, GCH Hobarra’s Let’s Get It Started, the Best of Breed winner at the 2014 Westminster Kennel Club Dog Show, to her stud, CH Glassonby Defying Gravity, the last Glassonby dog in the U.S., a cross that produced Violet’s litter. Cirincione feeds her “once-in-a-lifetime dog” Purina Pro Plan SPORT Performance 30/20 Salmon & Rice Formula.

“Violet” is the only Scottish Deerhound to win an all-breed and owner-handler Best in Show at the same show — and she’s done it twice. Violet took both Bests in Show at the Hudson Valley Hound Show in July 2018, three months after having her first litter, and at the Souhegan Kennel Club show in September 2017.

**UKC HUNTING BEAGLE WORLD CHAMPION IS A HOUND NAMED ‘CHIEF’**

A consistent, fast-tracking hound named “Chief” aced four 90-minute competition rounds over three days to become the 2018 UKC (United Kennel Club) Hunting Beagle World Champion. Breeder-owner-handler Trever McQuain, along with co-owners, his wife, Traci McQuain, and brothers Cory McQuain and Josh McQuain, all of Kimbolton, Ohio, who have been competing in the sport only four years after growing up with gundog Beagles, made history by becoming the first consecutive winners since the World Championship began in 2000. World HBCH GRCH GRHBCH TNT’s 3MC Chief outperformed 222 dogs to win the World Championship in September 2018 at Bunner Ridge Park in Fairmont, West Virginia. “Chief is a dog who likes to get out front, and his speed helps,” McQuain says. “He has an honest mouth. When he barks in his big, high-pitched ball voice, he is on the rabbit.” Chief was sired by TNT Cooperstown, the first field trial-bred Beagle owned by Trever McQuain. Although McQuain was seeking a gundog hunting companion, the sire “was faster than our other dogs, or they were that much slower,” he says. “Turns out, it was a combination of both.” This led to his getting involved in field trials. Their 2017 Hunting Beagle World Champion is World HBCH GRHBCH TNT’s 3MC Raisin’ Cain. Chief and “Cain” were fueled to their championship wins by Purina Pro Plan SPORT Performance 30/20 Chicken & Rice Formula.

A 4-year-old 15-inch red-tick male named “Chief” won the UKC Hunting Beagle World Championship with his speed and accurate tracking ability.
‘BONO’ IS THE TOP-WINNING HAVANESE IN BREED HISTORY

Charming, sweet and playful, a 2-year-old silver-and-white male named “Bono” is the top-winning Best in Show and Toy Group First Havanese in breed history. The No. 1 Havanese in all systems and No. 4 Toy dog, Multi-BIS/Multi-BISS GCH Oeste’s In The Name of Love shines with his outgoing, friendly nature. Bono was bred and is owned by the husband and wife team of Rafe Schindler and Mary King of Menlo Park, California, along with Julie Vogel of Norman, Oklahoma, and Taffe McFadden, of Acampo, California, also the handler. “Bono has a darling, beguiling face and expression that absolutely melts hearts,” McFadden says. “He is the essence of the breed, winning you over with his looks and spirited personality.” Considered a mirror image of his dam, BIS GCH Oeste’s Stealing The Starlight, Bono also reflects the standout qualities of his aunt, Multi-RBIS/Multi-BISS GCH Oeste’s Flirt’N With An Outlaw ROM, the No. 1 Havanese in all systems in 2013, who also was bred and owned by the Oeste Havanese team and shown by McFadden. At the Havanese Club of America National Specialty, Bono took Best of Breed in 2018 and was awarded Best in Sweepstakes in 2017 as a 1-year-old. He has won nine Bests in Show, including the Whidbey Island Kennel Club show in November 2018 in Monroe, Washington, and the Yosemite Kennel Club show at Woofstock in June 2018 in Vallejo, California. The adorable Havanese is fed Purina Pro Plan SPORT Performance 30/20 Salmon & Rice Formula.

With his friendly, outgoing nature, “Bono” set a breed record by earning the most all-breed points in a year as the top-winning Best in Show and Toy Group First Havanese.

GERMAN WIREHAIR NAMED ‘BELLE’ WINS GWPCA NATIONAL FIELD CHAMPIONSHIP

In her calm, steady, stylish way, “Belle” had her day to win the 2018 German Wirehaired Pointer Club of America National Field Championship in October at Mingo Sportsman Club in Bloomingdale, Ohio. The 4-year-old white-and-liver ticked female was handled in the horseback stake by pro Diane Vater of Burgettstown, Pennsylvania. During the hourlong brace, “Belle was really good on her game and steady to wing and shot,” says Vater, who was scouted by her husband, pro Charles Cooper. “She finished strong with seven bird finds.” NFC DC AFC Whitetail’s Antebellum Southern Style SH is owned by Larry Evans of Seneca, South Carolina, who handles her in walking trials and finished her show championship title in May 2018. After Belle won the National Field Championship, she became an Amateur Field Champion in November at the Tomoka Woods Pointing Breed Club of Florida trial in Cordele, Georgia. Bred by Billy and Deb Darby of Whitetail German Wirehaired Pointers in Walhalla, South Carolina, Belle takes her easy temperament from her dam, GCH Whitetail Fancy White Lightning JH. Her sire is FC Wilson’s Famous Amos SH. In other wins, Belle was the Best of Breed winner at the 2018 AKC Pointing Breeds Walking Gun Dog Championship. The talented Wirehair is fueled by Purina Pro Plan SPORT Performance 30/20 Chicken & Rice Formula.
‘NIK’ IS THE TOP-WINNING AKITA IN BREED HISTORY

With his easygoing temperament and sheer magnetism, a 7-year-old red male named “Nik” took naturally to dog shows and has become the top-winning Akita in breed history. Earning his championship at 15 months of age with three 5-point Majors garnered at Akita Specialty shows, Multi-BIS/Multi-BISS GCH Mojo’s Continuation Of A Myth ROM TT TKN CGC went on to trump the Best in Show record of 62 wins in April 2017, and then kept going to earn 100 Bests in Show through August 2018. Nik is owned by Stacey Borrmann of Mojo Akitas in Gilroy, California, who co-bred the litter with her husband, Paul Borrmann. Shown by professional handler Laurie Jordan-Fenner of Elk Grove, California, Nik swept Bests in Show at six four-day dog show clusters, including wins No. 97, 98, 99 and 100 captured last August at the Mensona Kennel Club and Santa Cruz Kennel Club shows in California. “He’s done a lot of winning,” says Borrmann proudly, who handled Nik to some of his early Specialty wins. Waiting a decade to get her first Akita after falling in love with the breed in the late 1980s, Borrmann says, “I am so fortunate that my first Akita had great temperament and was structurally sound. She was a fantastic foundation bitch.” Sired by Multi-BIS/Multi-BISS GCH Mojo’s Rock’N Your World AOM, the winner of 14 Bests in Show and a male from Borrmann’s first litter born in 2004, Nik is a powerful, big-boned male with a big personality. The No. 1 Akita in the country is fed Purina Pro Plan FOCUS Sensitive Skin & Stomach Salmon & Rice Formula.

AUSTRALIAN SHEPHERD ‘GRACE’ SETS BEST IN SHOW BREED RECORD

The top-winning Australian Shepherd in the history of the breed is a Brazilian-bred 7-year-old blue merle female named “Grace.” Professional handler Megan Hof, of Greenville, South Carolina, says, “Grace has an amazing attitude, extraordinary movement and a beautiful, sweet face.” Multi-BIS/Multi-BISS GCH Wind Spirit Rod’s Amazing Grace is a three-time Best of Breed winner at the United States Australia Shepherd Association National Specialty (USASA), having won in 2014 and 2016 and again in 2018, 10 months after having puppies. In 2017, Grace won the USASA’s first Top Twenty competition, and in 2015, she took Select Bitch. The only handler to win consecutive USASA Nationals with two different dogs, Hof showed the 2013 winner, GCH Woodstock’s Belle Star, before capturing Best of Breed with Grace in 2014. At the 2013 National, Hof showed 18-month-old Grace to Best Puppy in Show, and then sent her back to São Paulo, Brazil, with Wind Spirit Aussie breeders Carlos Osmar Bertero and Marcia Berna Bertero, as she was campaigning “Belle” that year. In January 2014, Hof began showing Grace, quickly finishing her AKC championship with the Aussie taking Majors at four all-breed shows. “Grace gets better and better, even now she looks better than ever,” says Hof, an Australian Shepherd breeder under the Allterrain prefix and co-owner of Grace with Berna Bertero. Grace, who is now retired except for showing at select Specialty shows in the Veterans class, is fed Purina Pro Plan SPORT Performance 30/20 Salmon & Rice Formula.

A record-setting Australian Shepherd named “Grace” is the winner of 27 Bests in Show and 21 Bests in Specialty Show.
It was a sweep for Jordan Horak of Fremont, Wisconsin, and his English Cocker Spaniels, “Cato” and “Breeze,” the winners, respectively, of the 2018 National Open and National Amateur Cocker Championships. Standouts through five field and one water series run over four days, both Cockers proved their keen problem-solving abilities and finesse of the fine line between working independently and as a team with Horak.

NFC Warren’s Sky Lark, a 3-year-old lemon roan male, captured the National Cocker Championship in October at Southport, New York, out of 87 dogs competing. “In the fifth series, Cato kept it together,” says Horak. “At one point, he flipped over a stone wall and still made the retrieve. He is an excellent marker with a phenomenal nose and lots of flash. He works with me impeccably.”

In April at the inaugural National Amateur Cocker Championship in Mazomanie, Wisconsin, NAFC FC Juggernaut Cool Breeze JH, a 6-year-old black female, blended intelligence, bird-finding ability and love of retrieving to outperform 56 dogs. In addition to her National Amateur win, Breeze was awarded a Certificate of Merit at this year’s National Open, and she placed third at the 2015 National Open.

Horak also is the owner-handler of the second-place National Amateur finisher, FC Juggernaut Rockin’ The Field MH, an 8-year-old black-and-tan male. “Rocky” is a full brother to Breeze, having the same sire and dam, though he was born in a litter two years earlier. Horak considers Rocky, his first field-bred Cocker, the cornerstone of his Juggernaut program and “an incredible bird finder with great power and stamina.”

Having grown up hunting behind retrievers, Horak discovered English Cocker Spaniels 10 years ago when he needed a smaller hunting dog and became smitten with the breed’s biddable disposition, intelligence, ability to hunt all day, and companionship. A mostly self-taught trainer who says he also received lots of help along the way, Horak initially learned how to train and handle his dogs by poring over books and videos. Seven years ago he began entering hunt tests and then turned to field trials in the fall of 2014, falling in love with the competitiveness of the sport.

In reflecting on winning both Cocker National Championships, Horak says, “Cato and Breeze made the most of the opportunities they were given. In a trial, a dog has difficult opportunities to either set themselves apart or fall apart. Both dogs adapted well and responded quickly to the opportunities they were given.”

Cato, Breeze and Rocky were powered to their National Championship wins by Purina Pro Plan SPORT Performance 30/20 Chicken & Rice Formula.
PURINA HONORS BRACE BEAGLE AWARD WINNERS

Edging out the competition with their meticulous tracking of cottontails, natural drive and smooth, easy style, three Brace Beagles proved their exceptional ability by winning 2018 Purina Awards in their respective divisions. The winners, along with their owners and handlers, were honored in October at an awards banquet in Pittsburgh.

An all-around hound with spot-on tracking ability, “Lady Dillion,” a 2-year-old 13-inch tricolor female, won four of the five Federation Futurity trials in which she competed to capture the Purina Outstanding Field Trial Brace Beagle Award. FCB Ruppe’s Lady Dillon gave co-owners Pete Proctor of Vale, North Carolina, and Jack Ruppe of Cowpens, South Carolina, their first Purina Futurity Award after a combined 80-plus years in the sport. Proctor previously won three Field Champion and four Derby Purina Awards, and Ruppe won the 2016 Derby Award. “Lady Dillon’s No. 1 asset was having great line control,” Proctor says. Lady Dillon, who was bred by Proctor and Bill Lewis, of Stella, North Carolina, was handled by the pro handling team of Bob and Lynette Coil of Bulls Gap, Tennessee.

Experience counted for “Lionheart,” a 2½-year-old tricolor male, who won two field trials and placed in three to be named the Purina Field Champion Award winner. Handled by Danny Williams of Grass Lake, Michigan, co-breeder and co-owner with his son, L.A. “Larry” Williams of Jackson, Michigan, and Rob Dillon of Grass Lake, Michigan, NBC FCB Grass Lake Lionheart stood out with his methodical tracking. Lionheart is a National Brace Champion having won in 2017.

Earning four first places and a second place in derby field trials, “Choc,” a 1½-year-old 13-inch chocolate female, dominated the competition to win the Purina Derby Award. Marty Parker of Taylorsville, Kentucky, who handled Choc, says, “She has a real big nose and a lot of ability.” Parker and Niki Happel of Pittsburgh are co-breeders and co-owners of FCB Steeler Town Boomin Business. “Choc has so much ability when tracking a rabbit. She has always amazed us,” says Happel of the precocious female who finished her Field Champion title at 14 months of age. Partners in brace beagling since 2007, Parker and Happel have won two Purina Field Champion Awards and four Purina Derby Awards. Both Parker and Happel grew up in the sport and have taken part in brace beagle field trials for more than 50 years.

All three Purina Award winners are fed Purina Pro Plan SPORT Performance 30/20 Chicken & Rice Formula.

FCB Ruppe’s Lady Dillon, the Purina Outstanding Field Trial Brace Beagle, is shown with co-owners Jack Ruppe, left, and Pete Proctor.

NBC FCB Grass Lake Lionheart, the Purina Field Champion Award winner, is posed by co-owners L.A. “Larry” Williams, left, and Danny Williams, the handler. Co-owner Rob Dillon is not pictured.

FCB Steeler Town Boomin Business, the Purina Outstanding Derby Award winner, is shown with co-owners Niki Happel and Marty Parker, the handler.
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Breed Snapshot

CHINESE CRESTED: A GRACEFUL, PLAYFUL TOY DOG

Elegant and graceful, playful and lively, the Chinese Crested evolved centuries ago from African hairless dogs. The high-spirited toy dog sailed the high seas with Chinese mariners as a hunter of flea-infested vermin carrying the Chinese plague that became pandemic in the mid-19th century. Frequently traded with merchants, the Crested even today can be found at ancient port cities around the world.

Among the admirers in the U.S., burlesque dancer Gypsy Rose Lee adored the Chinese Crested. An earlier influencer was New York journalist Ida Garrett, who took to the breed in the 1800s, promoting its development as a breeder, exhibitor and prolific writer for over 60 years. Starting in the 1920s, Garrett and Crested breeder Debra Woods, of Homestead, Florida, partnered to develop the breed for nearly 40 years. Woods maintained the breed’s stud book, which was turned over to the American Chinese Crested Club when it was founded in 1979.

This fine-boned toy dog, weighing from 7 to 12 pounds and standing 11 to 13 inches tall, is strong and agile. The Hairless Crested only has hair on its head (crest), tail (plume) and feet (socks), whereas the Powderpuff is completely coated. Both types may be born in the same litter, except when two Powderpuffs are crossed, producing only Powderpuff puppies. Unlike most dogs, the Hairless Crested has sweat glands, enabling it to sweat rather than pant to release body heat. A versatile, intelligent breed, the Chinese Crested excels in sports such as agility, obedience and rally. Admirers of the breed prize the sparkling alertness and joyful antics of this fun-loving toy dog.