n a sunny spring day in West Trenton, N.J., owners of more than 100 Cocker Spaniels, ages 6 months to 16 years, brought them to play together and sample frosty treats, while they enjoyed an ice cream social and auction fundraiser. Many had traveled hundreds of miles. Behind the fun was an eye examination and blood draw clinic that one day may lead to a DNA test for hereditary cataracts in Cocker Spaniels. Organized by Debi Lampert-Rudman of Pennington, N.J., the “Fun Day” clinic held in April 2013 was the first of several planned. She attributed the high attendance to the importance breeders and owners place on improving eye health in the breed.

Examining the dogs’ eyes was renowned veterinary ophthalmologist Gus Aguirre, V.M.D., Ph.D., DACVO, professor of medical genetics and ophthalmology at the University of Pennsylvania School of Veterinary Medicine. Aguirre’s earlier eye research in Cocker Spaniels led to the mutation discovery and development of a DNA test for the prob form of progressive retinal atrophy, an eye disorder that causes degeneration of the retina and progressive vision loss. Aguirre hopes to have similar success in studying cataracts in Cockers.

“Every Cocker Spaniel bloodline is affected by hereditary cataracts,” Lampert-Rudman says, “If breeders haven’t seen cataracts in their own dogs, they probably will. Possibly it has shown up in their dogs that went to pet families, and they just aren’t aware of it. I tell people who think their lines are clear that it is even more important for them to participate in a clinic because they may hold the ‘golden key’ to discovering the elimination of cataracts.”

“Every Cocker Spaniel bloodline is affected by hereditary cataracts. If breeders haven’t seen cataracts in their own dogs, they probably will.”

DEBI LAMPERT-RUDMAN, ORGANIZER OF THE COCKER SPANIEL EYE CLINICS

Deciphering the Genetic Basis

Cataracts are a leading cause of blindness in dogs and humans. They occur when the clear lens of the eye, used for focusing light in the retina at the back of the eye, develops cloudy spots that gradually inhibit light from reaching the retina. As the lens gets cloudier, it dims the light reaching the retina until the dog may become completely blind. Although not painful, cataracts increase the risk of an injury, particularly when a blind dog is in an unfamiliar surrounding.

Hereditary cataracts occur in at least 70 breeds. Despite the large number of breeds affected with hereditary cataracts, little is known about the genetics of the condition. These cataracts have breed-specific characteristics that relate to appearance, age of onset, rate of progression, and whether they occur bilaterally in both eyes.

In Cocker Spaniels, cataracts were first recognized in the 1970s. They can develop as early as 3 to 4 years of age and can affect the entire lens or a localized area. They may develop rapidly over weeks or slowly over years and may occur in one eye before the other.

Lampert-Rudman has been organizing Cocker Spaniel eye clinics for the past 17 years because she wants to give something back to the breed she adores. In the beginning, she supported the cataract research of Cathryn Mellersh, Ph.D., of the Animal Health Trust in the United Kingdom.

“For about 4½ years, I sent DNA sample kits and information to breeders all over the world as part of a program that was supported by the American Cocker Spaniel Club Foundation,” Lampert-Rudman recalls. “Breeders, in turn, sent their eye papers and DNA swab kits to the U.K. for analysis and research in hopes of finding a marker for cataracts.” Mellersh and her research team identified mutations in the heat shock transcription factor 4 (HSF4) gene that were responsible for cataracts in Staffordshire Bull Terriers, Boston Terriers, French Bulldogs and Australian Shepherds. Unfortunately, Cocker Spaniels did not share this mutation or any other mutation they could find.

Before getting involved in the cataract effort, Lampert-Rudman helped organize eye clinics to support Aguirre’s progressive retinal atrophy research. Aguirre plans to hold several Cocker Spaniel eye clinics in the near future. Because there are so many types of cataracts, he aims to ensure that he uses dogs for his studies that represent the same form of inherited cataracts.

The examinations already have yielded interesting results. Some dogs that had clear eyes in 2013 have since developed significant cataracts. Several middle-aged Cockers, from 6 to 7 years old, had cataracts that owners attributed to old age, but Aguirre says dogs don’t get cataracts at that age simply from aging.

Aguirre recommends that Cocker Spaniels receive annual eye examinations as cataracts that were previously considered age-related are really inherited. “Such dogs are very important for the research study,” he says.

In the 1970s, cataracts in Cockers were believed to be an autosomal recessive condition. Aguirre believes it could be two diseases caused by different genes. Because of this possibility,
Hereditary Cataracts
continued from page 1

Aguirre plans to examine separately DNA samples from different age groups. He also thinks cataracts in Cocker Spaniels are caused by a major gene rather than the combined action of several genes. "If it were a polygenic disorder, it would have a spectrum of phenotypes, which we don't see," Aguirre says.

Aguirre plans to use two methods to search for the causative gene mutation. First, he will use a candidate gene approach to compare previously identified cataract genes in other breeds and species to those of affected Cocker Spaniels. If no shared mutation is found, he will conduct a genome-wide association study to compare DNA from affected and normal Cockers to look for genetic differences.

Advances in Cataract Treatment

"Mir," a buff Cocker Spaniel belonging to Tammy Carroll of Live Oak, Fla., was 2½ years old when she showed signs of vision loss. "She started walking into walls and missing steps, plus she started barking more," Carroll recalls.

The veterinarian diagnosed cataracts, and the dog was surgically removed from her home six months later. In 2006, when the surgery was performed, it cost about $3,000. lampert-Rudman estimates the cost today is closer to $5,000.

Cataract surgery in dogs is similar to human cataract surgery except that dogs undergo general anesthesia for the surgery. The lens is removed through a small incision and usually replaced by an intraocular lens implant (IOL). The IOL takes the place of the lens, focusing light upon the retina. Without an IOL, the dog can detect light and dark, but objects are extremely blurred.

Although the prognosis for a return to functional vision after cataract surgery is excellent, the process isn't perfect. Despite the best efforts to remove cataracts, some lens cells remain behind and proliferate, gradually creating an opaque area in the rear of the lens. About 80 to 100 percent of dogs develop posterior capsule opacification (PCO). In humans who develop PCO, the condition significantly decreases quality of vision.

Heather Chandler, Ph.D., associate professor of the College of Optometry at The Ohio State University, is studying PCO in dogs. She says Cocker Spaniels and other medium-sized breeds develop PCO faster than large breeds. "The collective medium-breed category in our study had significantly more PCO than the two-week and two-to-four month recheck compared to the large-breed category," Chandler says. "It's very difficult to say how long after surgery it takes for PCO to form in Cocker Spaniels compared to other breeds because it's such a multifactorial problem. A young dog will develop PCO faster, and the type or stage of cataract will change the rate of PCO formation."

Chandler hopes to find ways to lessen the incidence and severity of PCO. Although intracocular lens implants can slow the rate of PCO in humans, the effect is not as dramatic in dogs.

"In our study, we placed IOLs in all the dogs, and they all still developed PCO within a year, so clearly it's not a preventive treatment," says Chandler. "The material and design of the IOL can affect the rate of PCO, thus there is debate about which IOL material is best at slowing PCO."

Chandler studies different types of IOLs, as well as capsule tension rings and different surgical techniques, to treat PCO. Research has shown that IOLs made of acrylic are most effective at reducing PCO formation, she says.

Capsule tension rings are small acrylic rings placed in the lens after cataract surgery that push outward, placing tension on the lens capsule to help keep it stable and possibly act as a barrier against PCO. "In a canine study, we noted a reduction, though not a statistically significant one, in PCO when we used capsule tension rings," Chandler says.

Chandler also has evaluated the effect of warm, pulsed fluid to "power-wash" the lens during cataract surgery to remove as many cells as possible. "This significantly slowed but did not prevent PCO formation," she says. "Sadly, in dogs there is no consistent, effective prevention for PCO, and once it forms, there is no treatment."

In research funded by the AKC Canine Health Foundation, Chandler is examining how well the drug cyclosporine A (CsA) decreases PCO formation and postoperative inflammation. "So far, the drug appears safe," she says. "It appears to induce a controlled cell death of the lens cells that cause PCO. We've also worked out an optimum dosing schedule."

Administering the drug is tricky. Neither applying the drug topically nor using the IOL to deliver it has been successful, so Chandler has developed a thermogel to use in surgery to deliver CsA. "We hope to start evaluating its effectiveness in dogs soon," she says.

The future for improved vision is getting brighter all the time for Cocker Spaniels, thanks to these treatment advances and the promise that Aguirre's research may lead to the causative gene mutation. Eventually, breeders may be able to eliminate hereditary cataracts, making it a disease of the past.

Eye Testing Required for CHIC Certification

The American Spaniel Club urges breeders and owners of Cocker Spaniels to have their dog's eyes tested for cataracts and other eye diseases common to the breed by a veterinarian who is board-certified by the American College of Veterinary Ophthalmologists. The parent club also encourages Cocker Spaniel owners to participate in certification by the Canine Health Information Center (CHIC) by submitting eye test results as well as hip dysplasia test results. For more information, visit the CHIC website at caninehealth.info/breedreq.html?breed=CS.

Purina appreciates the support of the American Spaniel Club and particularly Julie Virostek, president of the ASC Foundation, in helping to identify topics for the Purina Pro Club Cocker Spaniel Update newsletter.

Cocker Spaniel Owners Can Contribute to Cataract Research

Cocker Spaniel breeders and owners can contribute to knowledge about hereditary cataracts. Here are ways to make a difference.

**Participate in an Eye Clinic:** These clinics allow for the collection of DNA for genetic research and an eye examination by a board-certified veterinary ophthalmologist to determine whether a dog has hereditary cataracts. The lead investigator, Dr. Gus Aguirre, of the University of Pennsylvania School of Veterinary Medicine, hopes to personally examine dogs' eyes to ensure uniformity in characterizing the different forms of cataracts.

Alternatively, dogs can be seen at the University of Pennsylvania as part of Aguirre's regularly scheduled clinic appointments. Owners may call 215-896-4680 for an appointment. For more information, contact Debi Lampert-Rudman at bonbritany@aol.com. Information about Aguirre's eye clinics can be found on the website of the Orthopedic Foundation for Animals at ofa.org.

**Contribute DNA Samples for Genetic Research:** Submit blood samples to Optigen, a diagnostic testing laboratory in Ithaca, N.Y., to be used for establishing a relationship between cataract type and genotype once a gene mutation has been identified. Optigen seeks blood samples from Cocker Spaniels with cortical cataracts in both eyes that develop between 2 and 8 years of age. For further information, contact Optigen at optigen.com.

**Support Funding:** The American Spaniel Club and the American Spaniel Club Foundation (ASCF) plan to jointly support and fund the hereditary cataract research of Aguirre. Financial donations can be made to ASCF at asc-f.org, or you can send a check payable to ASCF at Laurie Foley, 6627 Robin Road, Dallas, TX 75209. All gifts should be earmarked "Dr. Aguirre's Cataract DNA Marker Research."
Creating a lasting impression with his easy, graceful gait and thick, curly black coat, GCH Claircreek Impression De Matisse is leading the pack in the Pro Plan Champions Cup standings with 234 points earned through April 30. The 2 ½-year-old male Portuguese Water Dog, who is called “Matisse,” was bred by Donna Gottdenker, who co-owns him with Milan Lint and Peggy Helming. After finishing second in last year’s Champion Cup program, Matisse continues to dazzle judges and spectators with help from professional handler Michael Scott.

The yearlong Pro Plan Champions Cup award program is based on points tabulated from Bests in Show and Group placements at more than 200 Purina-sponsored all-breed dog shows in 2014. This year’s winner will be determined in early 2015. The Pro Plan Champions Cup winner will receive a $10,000 cash prize, an original oil painting by dog portrait artist Linda Draper and a keepsake Pro Plan Champions Cup trophy. A permanent Pro Plan Champions Cup is displayed at the Purina Event Center in Gray Summit, Mo., along with a plaque engraved with the winners’ names. Cash prizes also will be awarded to the top-placing dogs as follows: Second place, $5,000; Third place, $2,500; Fourth place, $1,250. To view a tabulation of individual dog’s points and a listing of qualifying shows, please visit the Purina Pro Club website at purinaproclub.com. The Pro Plan Champions Cup is sponsored by Purina Pro Plan brand dog food.

FortiFlora Now Eligible for Purina Points

Did you know that Purina Veterinary Diets FortiFlora brand canine nutritional supplement has been added to the list of products eligible for Purina Points? Weight circle submissions from FortiFlora, a nutritional supplement available by prescription only that provides dietary management of dogs with diarrhea, are 390 points per box. “We are excited to add FortiFlora to the Pro Club program,” says Lisa Walsh, Purina Pro Club Communications Manager. “This product can have such a great impact on dogs’ digestive health, helping to protect them from the stress of extended trips and changes in routine, which is a common concern with show and sporting dogs.”

Look Online for New Weight Circle Submission & Reward Order Form

A new Pro Club Dog Weight Circle Submission & Reward Order Form is available online at https://purinaproclub.com/Content/Download/Dog_Weight_Circle_Form.pdf or by calling 1-877-PRO-CLUB (1-877-776-2582) between 7 a.m. and 5 p.m. CDT Monday through Friday. From the stress of extended trips and changes in routine, which is a common concern with show and sporting dogs.

Puvara-Sponsored Sporting Events* | June to August 2014

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<th>Event</th>
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<td>Pennsylvania Beagle Gundog Association Derby Runoff</td>
<td>June 14-15</td>
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<td>National Amateur Retriever Championship</td>
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<td>Purina All-Age &amp; Top Shooting Dog Awards</td>
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<tr>
<td>Professional Kennel Club Breeder's Showcase</td>
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<td>UKC Autumn Oaks</td>
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* This table lists some, but not all, upcoming Purina-sponsored sporting events.

Want to Reach the Editor?
Have comments about the Purina Pro Club Update? Send them to us at: Purina Pro Club Update, c/o Editor, Nestlé Purina PetCare, 2T Checkerboard Square, St. Louis, MO 63164 or via email at today’sbreeder@purina.com.
When dogs are traveling on the circuit to field trials or conformation shows, it is not uncommon for them to lose their appetite. Purina Pro Plan is introducing SAVOR Additions Natural Purées, a natural, nutritious flavor enhancer, to help stimulate meals.

Purina Pro Plan SAVOR Additions are highly palatable and made with nutrients such as antioxidants or prebiotic fiber. They do not contain added artificial colors, flavors or preservatives, and are formulated without corn, wheat or soy. They are made with human-grade ingredients.

Available in four puree blends, Pro Plan SAVOR Additions come in squeezable, resealable 4.5-ounce pouches that are convenient and easy to use. This enables owners to lightly coat a dog's dry kibble and then mix it in. The featured blends are:

- Beef & Carrot Purée with antioxidants from vitamins A and E
- Berry Blend Purée with antioxidants from vitamins A and E
- Chicken & Pumpkin Purée with prebiotic fiber from inulin
- Oatmeal & Apple Purée with prebiotic fiber from inulin

Pro Plan SAVOR Additions should not exceed 10 percent of a dog’s daily calories. Toy and small breeds up to 30 pounds should be fed one-quarter to one-half pouch per day; medium-sized breeds from 31 to 49 pounds up to one pouch a day; and large and giant breeds more than 50 pounds one to two pouches per day.

The new Purina Pro Plan SAVOR Additions Natural Purées will be sold individually starting in June at pet specialty and farm supply stores. For information, visit proplan.com or to talk with a pet nutrition consultant, call 800-PRO-PLAN (800-776-7526) from 7 a.m. to 7 p.m. Central time Monday through Friday.

Purina-Sponsored Dog Shows* June to August 2014

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<tr>
<td>Central Florida Kennel Club Dog Show &amp; Cluster</td>
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<td>Ann Arbor Kennel Club Dog Show</td>
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<td>Houston Kennel Club Dog Show &amp; Reliant Park World Series of Dog Shows</td>
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<td>Steel Valley Cluster</td>
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<td>Topeka Kennel Club Dog Show &amp; Capitol City Cluster</td>
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<td>Santa Barbara Kennel Club Dog Show</td>
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<td>Santa Barbara, CA</td>
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<td>Bayou Kennel Club Dog Show &amp; Cottonland Cluster</td>
<td>Aug. 29-Sept. 1</td>
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