Researchers Seek Genetic Marker for Legg-Calve-Perthes Disease

Breeder Lorraine Effa of Loriben Yorkies in Abbotsford, British Columbia, practices careful breeding by studying pedigrees and putting a great deal of thought into choosing breeding partners. Not surprisingly, she had high expectations that a particularly promising 6-month-old male, Loriben’s Strike Up the Band (“Archie”), could easily become a finished conformation champion.

Effa had bred Archie’s great-grand-dam and every subsequent generation. She knew his pedigree well. When the young dog began limping, she carefully monitored his condition. As the limping worsened, she became concerned.

After careful examination Effa’s veterinarian diagnosed Archie with bilateral Legg-Calve-Perthes disease (LCPD). Radiographs showed significant deterioration of the femoral head, or the “ball” of the ball and socket, as well as muscle atrophy in both legs. Over the next year, Archie had two surgeries to ease the pain caused by the disease. Taking precaution to not perpetuate the disease in her bloodline, Effa removed Archie from her breeding program and scheduled neuter surgery for the dog.

Today, Archie is 3 years old and lives with Effa. “I have been breeding since 1995, and I’ve never had a dog with Legg-Calve-Perthes,” she says. “It broke my heart to watch Archie go through this pain. Fortunately, he is doing very well. I wouldn’t want him jumping off high places, but he can go for walks and is a sweet little pet.”

After learning about LCPD research under way at Clemson University in South Carolina, Effa submitted Archie’s pedigree, radiographs and a blood sample for examination. The researchers are gathering samples from dogs affected by LCPD in hopes they can accurately pinpoint a genetic marker for the disease. If a marker is found, a genetic test could possibly be developed that would lead to early detection of dogs likely to be affected and help to identify those that carry the gene mutation.

Using SNP Array Technology
Yorkshire Terriers are not the only breed affected by Legg-Calve-Perthes disease. According to the Orthopedic Foundation for Animals, at least 26 breeds are affected by LCPD.

According to information on the Web site of the Orthopedic Foundation for Animals (OFA), the following toy and terrier breeds are at risk for developing Legg-Calve-Perthes disease (LCPD). The OFA maintains a database to help breeders identify dogs that test normal for LCPD. For information, visit www.offa.org.

Affenpinscher
Australian Terrier
Bichon Frise
Border Terrier
Boston Terrier
Cairn Terrier
Chihuahua
Cocker Spaniel
Dachshund

Fox Terrier
Jack Russell Terrier
Lakeland Terrier
Manchester Terrier
Miniature Pinscher
Miniature Schnauzer
Pekingese
Pomeranian
Poodle

Pug
Schipperke
Scottish Terrier
Shetland Sheepdog
Silky Terrier
Welsh Terrier
West Highland White Terrier
Yorkshire Terrier

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Legg-Calve-Perthes Disease

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us road maps to small regions on a chromosome or chromosomes to look for candidate genes,” explains Starr. “If we can identify a causative mutation or genetic marker, we can develop a test to identify at-risk dogs,” Murphy says. “This would allow a breeder to make informed breeding decisions, and potentially lead to removing a particular dog from a breeding program.”

In dogs with Legg-Calve-Perthes disease, an inadequate blood supply to the femoral head causes bone cells to die. The femoral head of the hip joint eventually collapses, resulting in an irregular shape and improper fit in the acetabulum, or “socket” of the ball and socket. The condition eventually leads to arthritis of the hip due to a rough, irregular joint surface.

How to Participate in LCPD Research

Researchers at Clemson University in South Carolina are seeking blood samples, pedigree information and radiographs of hip bones from breeds at risk for Legg-Calve-Perthes disease (LCPD). The information will be used to identify a genetic marker for the disease. Ultimately, the researchers hope to develop a genetic test to determine normal and affected dogs as well as carriers. Information and submission forms can be found on the Yorkshire Terrier Club of America Foundation Web site at www.yorkiehealthfoundation.org/samples.htm.

Sudden lameness, such as the limping Effa noticed in her Yorkshire Terrier Archie, is the most common clinical sign, usually beginning between 4 and 12 months of age. Some dogs even refuse to bear weight on the affected leg; thus, over time the leg muscles may atrophy and shrink from insufficient use.

The disease may occur in both hips; however, a study by Jennifer Demko and Ron McLaughlin published in the September 2005 issue of Veterinary Clinics of North America: Small Animal Practice indicates that the disease is bilateral in only 12 to 16 percent of dogs.

Dogs suspected of having Legg-Calve-Perthes disease should have hip radiographs taken. Cara Campbell, D.V.M., who practices at the Westside Veterinary Hospital in Pearland, Texas, says veterinarians look for a flattening of the femoral head, increased space in the acetabulum or a lucency (transparency) of the femoral head.

Treatment of the disease varies according to severity of bone loss and a dog’s pain. In mild cases, a dog may not experience much pain. Rest may allow healing of the damaged area. Frequently by the time a dog shows signs of pain, bone degeneration may be advanced.

“Once we see muscle atrophy in a dog, we know that pain is involved,” Campbell says. “The goal is to take away the pain so they will use their leg again. If severe LCPD is left untreated, you could have bone breaks or other injuries due to a femoral head that is half deteriorated.”

Surgery for Severe Cases

In LCPD cases in which the femoral head is severely deteriorated, a femoral head ostectomy (FHO) is recommended. The procedure removes the femoral head and neck from the femur to alleviate pain and discomfort. A veterinary orthopedic specialist typically performs the surgery.

“The leg is put back into the approximate position it would be if there had been a femoral head,” says Campbell. “Over time, the body forms fibrous scar tissue that helps to hold the bone in place.”

The surgery relieves the pain caused by LCPD because it eliminates the bone-on-bone contact that can occur in the affected joint. In their research, Demko and McLaughlin found that FHO has a greater than 84 percent success rate of alleviating pain and lameness. Campbell had FHO surgery performed on her Wire Fox Terrier, “James,” to treat LCPD. “After James’ surgery, we had him sleep in a 4-by-4-foot exercise pen,” she says. “We restricted his activity immediately following the surgery and only allowed him to go outside to use the bathroom. By the second week, we let him resume his normal activities.”

Complete recovery may take a full year. Lifetime care involves helping to avoid obesity and keeping a dog active. Though James was jumping over the baby gates at Campbell’s veterinary clinic two weeks after his surgery, Campbell says it is not normal behavior following FHO surgery. “In many cases, recovering dogs may hold the affected leg up most of the time,” she says. “They may be hesitant to walk on it because the leg is going to flop around some. During recovery a dog no longer has a secure feeling of having that ball in the socket. Until the dog learns the boundaries of how steady the leg will be post surgery, he may resist using it.”

Aggressive physical therapy immediately following surgery is not recommended until adequate healing occurs. Swimming and walking on a canine treadmill are safe forms of rehabilitation, Campbell says.

Veterinarians also recommend manually stretching or manipulating the healing joint.

“The most important thing with rehabilitation is to be aware of any pain that may be happening,” says Campbell. “You don’t want to cause pain for the dog through extensive manual manipulation shortly after surgery.”

Legg-Calve-Perthes disease varies significantly among dogs. Some dogs show few—if any—physical signs of the disease, while others are clearly in severe pain. Campbell was not aware that LCPD had founds its way into her breeding program until James sired two litters of puppies with the disease.

As a result of her own experience, Campbell advises breeders to have radiographs taken of every dog if LCPD is discovered in a breeding line. “Even if a dog doesn’t demonstrate clinical signs of the disease, I would have radiographs taken between 6 and 7 months of age,” she says. “If the X-rays look good, you should have them taken again at 10 to 12 months old. In ‘Janie,’ a half littermate to James, radiographic signs of LCPD didn’t start showing until she was 10 months old. At that point LCPD wasn’t causing pain, but still she showed radiographic signs.”

Effa agrees. “As breeders, we spend thousands of dollars on training or stud fees,” she says. “We can surely invest in radiographs to ensure that LCPD doesn’t continue to get passed along. Contributing to Dr. Starr’s research into the genetics of LCPD is also important. It’s not a matter of finger pointing. It’s about working together to ensure the future of our breed.”

Send Us Your Questions

Have questions about your Purina Points or how to redeem weight circles for rewards and rebate checks? Contact Purina Pro Club at 877-PRO-CLUB, or 877-776-2582, between 7 a.m. and 5 p.m. Central time Monday through Friday. You also may visit www.purina proclub.com to review and redeem Purina Points.

Want to Reach the Editor?

Have comments about Purina Pro Club Update? Send them to us at: Purina Pro Club Update, c/o Editor, Nestlé Purina PetCare, 27 Checkerboard Square, St. Louis, MO 63164 or via e-mail at today’sbreeder@purina.com.
A variety of new sports clothing and outdoor gear is featured in the Purina Pro Club Member Rewards program. Altogether more than 50 rewards, including merchandise and gift cards, are offered exclusively to members of Purina Pro Club.

The selection, tailored for breeder-enthusiasts who compete in canine sports, includes a wide range of items. The updated Pro Club Member Rewards brochure is available online at www.purinaproclub.com.

Among the new clothing items are a Nor’easter waterproof rain suit, work jacket, heavyweight parka, down jacket, and waterproof adventure jacket. The down jacket, which is filled with duck down and waterfowl feathers, can be zipped into the adventure jacket or heavyweight parka for added warmth. An outdoor fleece jacket, ladies’ soft shell jacket and microfleece jacket, full-zipper hooded sweatshirt, and reversible vests are new as well. All the clothing items are embroidered with either the Purina Pro Plan or Chosen By Champions logo.

New outdoor gear items include a deluxe, weather-resistant outdoor chair on a lightweight steel alloy frame. The chair comes in red with the Purina logo and in black with the Purina Pro Plan logo. Made of sturdy aluminum and weighing 12 pounds, the chair has a mesh back for comfort and ventilation. A new red-and-black Purina logo golf umbrella, with a 64-inch arc and rubberized handle, is also available.

Pro Club members can choose from a variety of restaurant and retail gift cards and gift certificates through the Member Rewards program. Several styles of Garmin® GPS tracking systems are available, including a dog-tracking system. A Pro Plan agility wing jump and Purina pop-up tent are also offered. In addition, Pro Club members may redeem Purina Points for veterinary checks and Purina brand dog food checks.

Members may choose items from the Member Rewards brochure by redeeming Purina Points earned from submissions of weight circles from packages of participating Purina brand dog foods. Weight circles are the colored circles on dog food packages. Only weight circles, not UPC codes, are valid for credit to a member’s Pro Club account.

To be eligible for membership in Purina Pro Club, one must personally care for five or more dogs and/or breed one litter of puppies a year and live in the United States. Only one membership per household is allowed. Dog food bought must be fed to dogs personally owned or cared for by the Pro Club member. Pro Club is not a program for institutional organizations, such as rescue groups, humane societies or animal shelters.

For information about Purina Pro Club or the Member Rewards program, you may access your account online at www.purinaproclub.com or call member services toll-free at 877-PRO-CLUB or 877-776-2582 between 7 a.m. and 5 p.m. Central time.

Pro Club Policy on Blocked Calls

Purina Pro Club customer service representatives may not be able to reach you if your phone does not accept blocked calls. If you have called Pro Club on an issue expecting a telephone response, Pro Club may not be able to respond. The issue resolution will be entered in your account. When you call again, a representative will be able to share the information.

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<tr>
<th>Event</th>
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<th>Location</th>
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<td>New York City Metro &amp; Progressive Dog Shows</td>
<td>Feb. 12 to 14</td>
<td>New York City, NY</td>
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<tr>
<td>Rocky Mountain Cluster</td>
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<tr>
<td>Foothills Dog Show Circuit</td>
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<tr>
<td>International Kennel Club (IKC) of Chicago Dog Show</td>
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<td>Belle City Cluster</td>
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<td>Belleville, IL</td>
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<td>Detroit Kennel Club Dog Show</td>
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<td>Connecticut River Working Group Association Dog Show</td>
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<tr>
<td>Tar Heel Cluster</td>
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<tr>
<td>Dalmatian Club of America National Specialty</td>
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<td>Peach Blossom</td>
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<td>American Rottweiler Club National Specialty</td>
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*This table lists some, but not all, upcoming Purina-sponsored dog shows.
New Pro Plan Champions Cup Offers Cash Prize & Cruise to Winner

The winner of the 2010 Pro Plan Champions Cup will receive a $10,000 cash prize and a trip for two on next year’s K-9 College Cruise to the Caribbean. Cash prizes also will be awarded to the second, third and fourth place finishers.

“The Pro Plan Champions Cup was introduced 10 years ago to honor those who promote excellence in the sport of purebred dogs through conformation dog shows and to support the dog fancy,” says Ann Viklund, Purina Director of Breeder-Enthusiast Marketing. “We are very excited to expand to a yearlong program that includes all Purina-sponsored all-breed dog shows.”

Previously, the Pro Plan Champions Cup was awarded to the dog earning the most points at three select Purina-sponsored benched dog shows. Now, nearly 200 all-breed dog shows are included. At the end of 2010, points will be tabulated based on the following:

- Best in Show, 5 points;
- Group One, 4 points;
- Group Two, 3 points;
- Group Three, 2 points; and
- Group Four, 1 point.

The dog earning the most points will win the $10,000 cash prize, K-9 College Cruise and a keepsake Pro Plan Champions Cup crystal trophy. A permanent Pro Plan Champions Cup will be displayed at the new Purina Event Center along with a plaque engraved with the winners’ names. The Event Center opens in fall 2010.

Cash prizes will be awarded to the top-placing dogs as follows:
- Second place, $5,000;
- Third place, $2,500; and
- Fourth place, $1,250.

More information about the 2010 Pro Plan Champions Cup and a running tabulation of individual dogs’ points will be available in early March on the Purina Pro Club Web site. Visit www.purinaproclub.com for information.

The Pro Plan Champions Cup is sponsored by Purina Pro Plan brand dog food.

Get Connected to Pro Plan on Facebook

A new Purina Pro Plan for Professionals Facebook fan page allows breeders and enthusiasts to connect using the popular social networking site. Fans can post photos, videos and experiences, and share insights about breeding, handling and other topics.

Go to www.facebook.com/PurinaProPlanforProfessionals to become part of the conversation and share your passion for the sport with a community of dog enthusiasts.

- New Pro Plan Champions Cup Offers Cash Prize & Cruise to Winner

Purina-Sponsored Sporting Events
February to April 2010*

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<th>Location</th>
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<td>National Shooting Dog Championship</td>
<td>Feb. 1 to 8</td>
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<td>National Championship</td>
<td>Feb. 14 to 27</td>
<td>Grand Junction, TN</td>
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<tr>
<td>National German Shorthaired Pointer Association (NGSPA) National Championship</td>
<td>Feb. 25 to March 7</td>
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<td>Southeastern Championship</td>
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<td>American Rabbit Hound Association (ARHA) Little Pack World Hunt</td>
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<td>Booneville, IN</td>
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<tr>
<td>Grand National Grouse &amp; Woodcock Invitation</td>
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<tr>
<td>Purina Outstanding SPO (Small Pack Option) Beagle Award/AKC SPO National</td>
<td>April 16 to 19</td>
<td>Morgantown, KY</td>
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<tr>
<td>Hunting Retriever Club (HRC) Spring Grand</td>
<td>April 17 to 21</td>
<td>Baton Rouge, LA</td>
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