

PRA UPDATE

What We Know and Where to Find It

December 2014

PRA1 DNA Testing:

The PRA1 DNA test has been available to breeders and owners since Spring 2012. As of September 30, 2014, nearly 900 papillons worldwide have been DNA tested by Michigan State University (MSU) and two genetic testing labs: OptiGen and Paw Print Genetics (both located in the USA). In early 2014, two other genetic testing labs in Europe began offering the PRA1 DNA test: Laboklin (Germany) and Genomia (Czechoslovakia). Laboklin has provided a percentage breakdown of PRA1 test results (Normal, Carrier, and Affected) for more than 300 papillons and phalènes. Of those papillons tested by MSU, OptiGen and Paw Print Genetics, about 18% are Carriers and 2% are PRA1 Affected. Laboklin reports similar percentages for the dogs that lab has tested. See sidebar “Are There Any PRA1-Affected Papillons” for more details.

ARE THERE ANY PRA1-AFFECTED DOGS?

Just the Facts

- ✓ The PRA1 DNA test has been available since Spring 2012. This test identifies genetically-normal dogs, PRA1-carrier dogs, and PRA1-affected dogs.
- ✓ As of September 30, 2014, three genetic test labs (MSU, OptiGen, Paw Print Genetics) have reported a total of 15 PRA1-affected dogs, confirmed by DNA test.
- ✓ Of the 15 PRA1-affected dogs reported, 10 are from the USA and 5 are “non-USA”. “Non-USA countries” include: Australia, Brazil, Canada, Chile, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Netherlands, Norway, Russia, Sweden, Switzerland, UK.
- ✓ Laboklin genetic test lab (Germany) has reported that 1% of the “more than 300” dogs they have tested are PRA1-affected, confirmed by DNA test. These 1% are not included in the 15 dogs reported, so there are “more than 15” dogs who have been DNA tested as PRA1-affected.
- ✓ All of this factual information is, and has been (since 2012), publicly available on our Papillon Club of America Genetics website (www.pcagenetics.com) and is updated quarterly.

Our next update of the PRA1 Statistics chart will be results through December 31, 2014, to be posted on our Genetics website in early January 2015.

Our PCA Health and Genetics website (www.pcagenetics.com) has both a cumulative listing of PRA1 Results by year (2012, 2013, and 2014 thru September) and a chart showing worldwide Statistics for PRA1 Test Results - based on data provided by MSU, OptiGen and Paw Print Genetics. We hope to add the statistics of PRA1 testing done by Laboklin and Genomia labs in the near future, which will give us an even better statistical view of PRA1 incidence in our gene pool worldwide.

DNA testing our breeding stock is just the first, and most important step we all need to take. But sharing those results is another key step towards our goal to eradicate PRA1 from our papillon gene pool! Our goal should be two-fold: 1) know the status of our own breeding stock and use that information wisely going forward and 2) promote responsible breeding for the improved health of our papillons. No responsible breeder *wants* to produce PRA1 carriers or affected dogs. The wider the dissemination of PRA1 status on our dogs, the sooner we will be able to eradicate PRA1 from our gene pool!

Important points to remember:

- “Don’t look back!” Test your current breeding stock and go forward from there with “smart breeding” practices.
- It is not necessary nor is it productive to try to “place the blame” on dogs (or breeders) who might have contributed the genetic mutation. We did not have a DNA test back then, so what’s important is what we do going forward.

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- Breeders did not *intentionally* breed carriers. Prior to PRA1 DNA testing, they had no way to know whether their dog was a carrier or not.
- “Don’t throw the baby out with the bath water.” **Carriers can be bred!** Breed a Carrier dog to a genetically Normal/Clear dog and test the offspring. Statistically, such a breeding has a 50% chance of producing Normal/Clear dogs.
- *There is good news:* DNA testing assures you that you need *never* produce a PRA1-Affected dog!
- By DNA testing and sharing our results, we can eliminate the PRA1 genetic mutation from our papillons in just *a few generations!*

More PRA Research:

Dr. Simon Petersen-Jones and his MSU research team are continuing their scientific search for the second type of PRA in papillons. With the help of Alla Jenkins from Germany, blood samples were collected from a group of closely-related papillons in Europe. All of these dogs were DNA tested Clear/Normal or PRA1, but some of these dogs are *PRA Affected*. Using DNA samples from these dogs that have tested PRA1 Clear/Normal makes it easier for researchers to focus on the *second* PRA genetic mutation (PRA2). The DNA from this “family” of dogs will provide valuable data for our MSU researchers. It is possible that MSU can obtain more blood samples from other members of this closely-related family. Dr. Petersen-Jones latest status report (December 30, 2014):

“Update on our work: We are submitting our DNA samples for the gene hunting for PRA2 early next year. We are keeping our fingers crossed that we will get a “hit”. We are continuing to collect more samples from dogs confirmed with PRA that are clear of PRA1. We are also continuing to collect DNA samples from dogs with [congenital] cataract.”

Earlier in 2014, PCA Genetics fund provided MSU with an additional \$20,000 to support their PRA research effort. We will also be doing several fundraisers in conjunction with the 2015 National to raise funds to support PRA and other genetic research. Please support our efforts by donating generously to our fundraisers!

Eye Exams by Veterinary Ophthalmologist:

Even though we are making good progress towards eliminating the genetic mutations for PRA (all types), it is still critically important that you continue to have your dogs’ eyes examined, on a regular basis, by a veterinary ophthalmologist. Other eye diseases besides PRA still exist for papillons (e.g., glaucoma and congenital cataracts). We are seeing an increase in reported cases of (Juvenile) Congenital Cataracts, which show up at a very early age. In the past, many breeders haven’t done CERF or OFA exams on their papillons until a year or two of age - namely, prior to breeding. However, it is now become apparent that we must have our dogs’ eyes checked *at a young age!*

Dr. Simon Petersen-Jones of MSU offers the following recommendations and comments:

“Continuing to screen dogs is important not only because of genetic eye disease that may be in the breed at low incidence but also because of the possibility of new mutations occurring in the future.”

An examination of young animals is useful to detect any congenital abnormalities. Obviously all dogs should be screened prior to breeding. Older dogs should still be examined (does not need to be so frequent) because some conditions have a late onset.

Once a line is cleared of a genetic disease by a mutation detection test the subsequent offspring theoretically do not need to be tested. However sometimes accidental matings can occur and the animal thought to be the sire may not be.... This could be one reason to continue to test offspring of cleared animals. I am sure the testing companies can supply you with their justifications for this recommendation.”

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Stay Tuned for More!

In addition to the PRA1 Results and Statistics on the PCA Genetics website (www.pcagenetics.com), we also regularly post news and updates on our Facebook page: PCA Health & Genetics Committee. Here you can find information about PRA DNA testing (including discounts being offered), as well as informative posts about other genetic research projects, fundraisers, and educational articles. "Like" us to receive notifications! You can also find informative articles about PRA on various genetic testing labs' sites. Here are links to some good examples:

MSU: <http://cvm.msu.edu/hospital/services/ophthalmology1/papillon-pra-research>
<http://givingto.msu.edu/stories/story.cfm?id=75>

OptiGen: http://www.optigen.com/opt9_pappra1.html
http://www.optigen.com/opt11_faq.taf#faq4

Paw Print Genetics: <https://www.pawprintgenetics.com/products/tests/details/147/?breed=279>
<https://www.pawprintgenetics.com/blog/search/?pattern=PRA1>

Genomia: http://www.genomia.cz/en/test/pap_pra1/

As you can see, there's lots of good information out there to keep you up to date and informed about PRA. Enjoy!

Submitted by:

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