ASSA Health Committee

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Clear By Parentage: Listen, Trust . . . . Verify

In our last newsletter, we concentrated on the tests required for obtaining a CHIC number for Shetland Sheepdogs, and how to go about making sure those test results were documented and recorded. In this issue, we'd like to clear up a common misconception about the Clear By Parentage program – and hopefully help you avoid some pitfalls.

"Clear By Parentage" is a phrase we've heard used as a way for breeders to indicate that, in their mind, the puppies in a specific litter could not possibly carry a certain disorder. This is solid in their mind since they bred the dam, ***using clear parents*** – and were now breeding her to a male they were assured was also "clear" for the same reason; the owner of the sire knew HIS parents to be clear as well.

What it boils down to is we're often willing to accept what we're told as factual since we (a) are good friends with the other person and cannot imagine them telling us something that may not be true, (b) feel awkward questioning their statement because they are a "reputable breeder" and should certainly know their line, (c) feel unsure enough of our own knowledge base and find it less intimidating to just take what comes – or (d) all of the above.

As we stated on page three of the last newsletter, it's not enough to <u>know</u> it – you need to **document** it if you want the CBP designation to appear on the OFA/CHIC database along with your dog's records. So, you can stand your ground and let OFA be the "bad guy", because they have taken the issue off the table for you. It's a DONE DEAL.

In order to register the offspring as Clear By Parentage on the CHIC database, you **must** follow certain steps.

A DNA Identity Profile is one in which the dog's individual DNA sequence is determined using set markers for analysis and is for parentage verification and genetic identity purposes ONLY.

It does not provide information regarding genetic health, conformation, performance ability, coat color, etc.
AKC DNA is not a breed identification test beyond confirming parentage if the sire and dam also have DNA on file.

First: sire <u>and</u> dam **must** have been **DNA tested <u>clear</u>**

(so for Shelties: vWD, MDR1 or CEA are eligible)

(Continued on page 2)

What do I need?

- ***REQUIREDS:***

Hips: Either OFA or Penn-Hip—after 2 yrs of age

Eyes: annually thru age 5, then every two years till age 9

- ***ELECTIVES: (2 needed)***

Elbows

vWD

MDR1

Thyroid

CEA(CH)

DON'T FORGET TO C.I.D

Good for your credit card, and your dog!

Before your dog can obtain a CHIC number, it must be permanently identified by use of a microchip or tattoo.

You can get the tests done without the ID confirmation, but a CHIC number will not be granted until ALL components have been met.

CHIC Champion of Health Nominations Sought

The ASSA, as a Canine Health Information Center (CHIC) participating parent club, will be applying for the OFA sponsored "Champion of Health" award this year. The "Champion of Health" award celebrates dogs that have achieved significant accomplishments whether in the conformation ring, performance events, as working dogs or as producers AND that have the full complement of appropriate health screenings.

The award will consist of an engraved medallion, certificate and $100 donated to the AKC Canine Health Foundation. The award will be announced and presented during the week of the National Specialty show.

Any ASSA member in good standing may nominate any Shetland Sheepdog provided that the dog in question has a CHIC number at the time of nomination.

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Clear By Parentage, cont.

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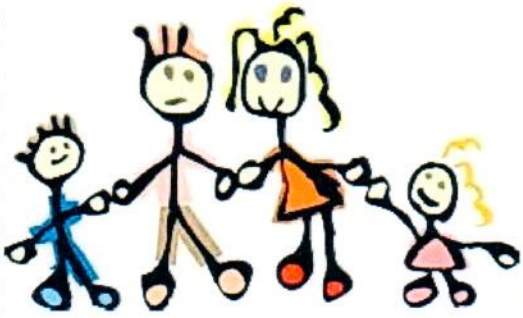
Second: those results must have been **registered** with OFA.

Third: you must have a **DNA identity profile*** done (again on sire, dam **and** offspring) – remembering to test EACH offspring that you wish to document

There are several very valid reasons for OFA/CHIC to require such documentation. First of all, because of the possibility of new or as yet undiscovered gene mutations, only **first** generation offspring warrant such clearance. (In fact with linkage or marker based tests, where a high margin of error exists, CBP is not offered at all. Luckily, we do not have to face that with Shelties; at least not at this point in time.)

Even if there are no mutations involved, and every disorder remains exactly as originally detected, without ***DNA proof of parentage*** on subsequent generations, it is impossible to declare multiple generations CBP with any certainty. The very fact that it is possible for a canine litter to have multiple sires tells you that the possibility exists for a **definite "CBP"** to quickly turn into a **"well, I thought"** scenario. Likewise, generations down the line, there will be no record of which ancestors were actually clear – and which ones were speculative. You would need to research the pedigree back dog by dog to even hazard a guess.

To help you understand a ***DNA Identity Profile,*** we've attached a simple explanation and worksheet for you to use called Understanding Your AKC® Profile. Additional information can be found at: ***http://www.akc.org/dna/faq/***



Simply put, by comparing the gene markers for the sire and dam to those of the offspring one can determine whether or not the offspring is the result of that particular mating. It's the same basic technology used in law enforcement world over, as explained in AKC's tutorial.

So, let's assume you want to do it right and get all the ***DNA Identity Profiles*** done, but you're struggling to be frugal. Well, here's a word of caution!

Many laboratories do ***DNA Identity Profiles***, and some have better price points than others. However, they do NOT all use the same marker panels (the columns indicated on the example as PEZ01, PEZ03, etc.). In order to submit an application for **Clear By Parentage** – all **three** of the profiles (sire, dam and offspring) MUST be done by the **SAME LABORATORY** so that they can be compared.

Keep in mind, AKC now requires ***DNA Identity Profiles*** in other situations; frequently used sires, multiple sire litters, when using chilled / extended or frozen semen and for imported breeding stock. Such documentation is accepted only when done through their contracted lab. It makes sense that AKC would need all DNA testing be tightly controlled since their database contains thousands upon thousands of animals, all of which must be analyzed and cross-referenced using the **same** marker panels.

As you can see, it makes sense to use AKC's DNA testing right from the start, since at some point down the road you may find yourself having to do a second profile – resulting in greater cost. A couple extra dollars now may well mean big savings in the

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Champion of Health, cont.

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Additional health screenings beyond those needed for CHIC status are not required for nomination, but will enhance the overall nominee's qualification for the award. Participation and titles in more than one venue are encouraged.

Special accomplishments of offspring and accompanying health clearances/CHIC numbers will be an additional consideration.

Complete the attached form for each nominee and enclose proof of non-OFA health clearances and achievements. Please only one dog per form. Additional information about the nominee is encouraged!!!!! Use the back of the form or additional pages.

The deadline for submitting this form is **JANUARY 15, 2016!!!**

Please submit the form with any additional data pertinent to the nominee to:

Glenda Price
357 Joy Haven Dr.
Sebastian, FL 32958
Email: trestaoac@aol.com

Clear By Parentage, cont.

(Continued from page 2)

long run! All of our assumptions here are based on using AKC for DNA profiles.

Once you get your AKC DNA profile report back, be sure to send it to OFA and request they add it to your dog's records. It will get updated automatically if other tests, etc. are submitted to OFA and they cross reference your dog's AKC record, but it's easier to just get it done while you're thinking about it.

Before applying for CBP, the first thing to do is check the OFA records to see if all DNA Profile #s are listed. If they are, you need only worry about submitting the CBP application. If they are not listed, you'll want to submit copies of the missing reports with your application. If you don't have a hard copy of the report, the DNA Profile # will suffice, as long as it has been submitted to AKC. (Keep in mind: if the DNA reports are from another laboratory, you will need to get hard copies of the actual report to submit.)

In that AKC requires DNA Identity Profiles on any mating done via fresh/chilled or frozen semen, it is becoming more and more common for males to have their number on file.

AKC currently charges $50 for a DNA kit

$45 if prepaid

Once you have determined you want to apply for Clear By Parentage, and you've done the preliminary paperwork, the actual CBP process is simple. Just follow this link - http://www.offa.org/pdf/dnaapp_bw.pdf - to the Application for DNA Based Genetic Database form. If the link doesn't work, go to the OFA website (www.offa.org) and click on "FORMS" on the upper task bar. From there, click on "OFA Application Forms" and select ***DNA Based Genetic Disease*** from the menu.

Complete the form and send it, along with the appropriate documentation, fees, to OFA. (Current registration fees are listed as: $15 for one individual/test, $7.50 for the kennel rate of 5 or more (owned/co-owned by the same person), and $30 for a litter of 3 or more submitted together.

Once processed, you will receive certification and the designation "CBP" will automatically appear on the dog's OFA records.

Show Me The Money!

Your savings in getting Clear By Parentage certification vs. doing the tests individually is, of course, dependent upon what tests the parents had already **passed** for which you wish to declare CBP.

Let's take a look at the costs, and where your 'break even' point is going to be. For this example we'll use the individual test prices available at the 2015 ASSA National Health Clinic:

- MDR1 = $60
- vWD = $75
- CEA/CH = $135

Testing individually for all three disorders would cost $270 per dog.

Consider this scenario: You want to declare CBP for all three (3) tests – on one (1) puppy. Sire and dam are listed on the OFA/CHIC database as being **CLEAR or NORMAL** for all three tests, but they had NOT been profiled as yet. The first step would logically be to pre-pay for three (3) DNA kits, for a total of $135, do the swabs on all three dogs and submit the DNA profile kits to AKC.

Once you get the paperwork back, with all three dogs now showing DNA #s (with parentage confirmed on the puppy), you submit the CBP request to OFA along with your $45 registration fee ($15 **per test**). You can use just one form, citing all three tests on the top line of the form, but the registration fee is per test!

(Use the "Application for DNA Based Genetic Database" form, available through OFA; see the links to follow.)

Your total cost was $180 for the one puppy; a savings of $90 over doing the tests individually.

If you have two puppies you wish to submit for CBP in that same litter, you would need to pay for an additional profile ($45) and the CBP application for the 3 tests ($45) - bringing your total to $270. Since getting the CEA test done for the two puppies would cost that much, clearing them for MDR1 and vWD is essentially free.

Now, let's assume both sire and dam have already been tested/cleared and registered with OFA as Normal/Normal for MDR1, but that's the only test they've had done - and only the **sire** had been DNA profiled.

To apply for CBP, you would need to do profiles on both dam and puppy ($90), plus the cost of the CBP application ($15) and you're at a total of $105; yet doing the MDR1 test on one puppy would cost only $75 (test and registration).

No savings at this point, but remember to keep your future needs in mind when doing a "break even" analysis.

CBP Made Easy!

1 ✓ OFA RECORDS FOR DNA #

- If ALL DNA#s are on file – (COMPLETE the CBP form and go directly to Step 4)
- If one or more DNA#s are missing - (Go to Step 2)

2 GET missing DNA # from Owner(s)

- If AKC DNA Identity Profile was done
  - obtain DNA # (Go to Step 3)
- If ANOTHER laboratory was used for Identity Profile
  - Obtain hard copy of the report
  - Confirm sire, dam & offspring all have reports from same laboratory (Go to Step 3)

MEMBER CLUBS: DON'T FORGET TO APPLY FOR AN ASSA GRANT IF YOUR CLUB IS SPONSORING A HEALTH CLINIC! CONTACT YOUR REGIONAL DIRECTOR FOR DETAILS

3 COMPLETE the CBP form

- Include all AKC DNA Profile #s OR
- Include hard copy DNA Profile Reports from all NON-AKC laboratories (Go to Step 4)

4 SUBMIT CBP application form with appropriate documentation and fees: currently $15 per TEST. You do not need to pay for the DNA profile reports.

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Healthy Dogs Are Happy Dogs
We Owe Them That

The ASSA Health Committee compiled an instructional guide to help member clubs put on Health Clinics.

These clinics aid your membership in obtaining valuable health clearances at discounted prices, while serving as valuable fund raisers for your club treasury and satisfying your club's educational requirements with AKC.

If your club is an ASSA member club, and has not received a copy of the Guide to Sponsoring Health Clinics CD, please contact the Health Committee.

You may also download the Guide from the ASSA web site.

AMERICAN KENNEL CLUB®

Understanding Your AKC® Profile

Thank you for participating in the AKC DNA Profile Program. Enclosed is an AKC Letter of DNA Analysis containing the AKC Profile for the dog listed. The information below is intended to help you understand, interpret, and apply the results you have received. Please note - the genotype for your dog does not verify his/her parentage. Parentage is only verified by comparing the DNA profiles for the sire, dam and pup.

The enclosed DNA Profile shows the SuperPlex-G panel of DNA markers. A gender marker has been included to provide a quality assurance check on the results (GEN). This gender marker will show as XY for a male and XX for a female.

AKC DNA Profiles (**genotypes**) are generated using the same technology used by law enforcement agencies throughout the world. How does this work? In humans and dogs alike, each **gene** is present as two copies called **alleles** (displayed as letters below). Offspring receive one copy of each gene from each parent in a random process. This genotyping technology does not use actual genes, but other DNA sequences referred to as **markers**, that are also inherited one copy from each parent. Because markers are not functional genes, the AKC DNA Profile does not provide any information about the conformation of the dog, the presence/absence of genetic diseases, or any information about the breed of a dog. AKC DNA Profiles are used solely for genetic identity and parentage verification purposes.

Using Genotypes for Genetic Identification and Parentage Verification – An Example

Marker:	PEZ 01	PEZ 03	PEZ 05	PEZ 06	PEZ 08	PEZ 12	PEZ 20	UCB 2010	UCB 2054	UCB 2079	PEZ 16	PEZ 17	PEZ 21	GEN
Sire Genotype =	BE	FG	BC	HH	EE	HH	GI	BB	CD	AA	AG	CD	BK	XY
Dam Genotype =	BF	DG	BC	DG	EE	GG	II	BB	CD	AB	DE	AB	EF	XX
Pup 1 Genotype =	EF	DG	CC	DH	EE	GH	GI	BB	CD	AB	AE	AD	BF	XY
Pup 2 Genotype =	BF	DG	BB	DH	EE	GH	GI	BB	CD	AA	AE	BC	BE	XX
Pup 3 Genotype =	**CD**	**BE**	BB	**DD**	EE	**CH**	GI	BB	CD	AA	**CD**	AC	**AB**	XX

Glossary

Genotype: genetic constitution or makeup; **Gene**: the basic unit of heredity made of DNA; **Allele:** different forms of a gene. Each parent contributes one allele for each gene pair; **Marker**: a stretch of DNA that is not a gene, but is inherited the same way as a gene; Markers are labeled as PEZ01, PEZ03, etc., above and on the DNA Profile.

Unique identification: If we look at the genotype of the sire at PEZ01 (BE) and the dam at PEZ01 (BF), we see that they share the B allele, and the second allele of this marker is different (E for the sire, F for the dam). We can continue this to PEZ03, where the sire has FG, and the dam, DG. Again, they share the G allele, but the sire has an F, and the dam, a D. At PEZ05, they have the same alleles. Considering the remaining eleven pairs of markers, we see three more are the same (PEZ08, UCB2010, and UCB2054), but, the dogs have different genotypes. The genotype is unique like a fingerprint, and the chance of genotypes matching is less than one in a million.

An empty marker: Occasionally, the information at one marker on the profile will be empty. This means that the genotype at that marker could not be determined. It does not imply anything negative about your dog. The remaining markers provide enough information to establish identity and determine parentage for the vast majority of cases.

Gender: The last marker in the AKC DNA Profile (labeled GEN) tests for a gene on each sex chromosome. Males will show XY and females will show XX for these markers. These gender markers provide an added level of quality control to the DNA Profile process. The same principles of inheritance work with the gender marker exactly the way they do with the other tested markers. The dam contributes an X marker/chromosome to the offspring, and the sire contributes either an X or Y.

Parentage verification: At the first marker, the sire can contribute either a B or E to each pup, and the dam can contribute either a B or F. Pup 1 has EF (E from the sire, F from the dam). Pup 2 has BF (B from the sire, F from the dam). Pup 3 has CD, neither of which are present for the sire or the dam. When an allele from the sire or dam does not match with the pup, this is called an exclusion. If we continue this analysis across all fourteen markers, we see that the alleles for pups 1 and 2 are consistent with them being the offspring of the sire and dam (they are *included*). Pup 3, however, is *excluded* at six markers (underlined in the chart), showing that this pup cannot be the offspring of the sire and dam tested. In some instances, a pup will have an exclusion at only one marker. A single marker exclusion may be the result of a mutation event and, from a statistical standpoint, does not provide sufficient evidence to conclusively rule out parentage. Parentage of a sire/dam is considered excluded when the alleles at **two or more** markers are excluded.

Genotype Analysis Table

Use this table to compare the genotypes of your dogs. You will see that each dog is unique, and you will be able to analyze parentage. Simply write in the letters of your dog's genotype in the order in which they appear on the DNA Profile, as shown in the example below. Then compare the results for each pair of markers. At each marker for a pup, the sire contributes one allele (letter), and the dam contributes one allele (letter). Therefore, the pup should have one allele or the other from the sire and the dam.

Example

B C	B J	B C	A C	F Z	C D	E E	N Q	I K	D F	A G	C E	B B	X Y
PEZ01	PEZ03	PEZ05	PEZ06	PEZ08	PEZ12	PEZ20	UCB2010	UCB2054	UCB2079	PEZ16	PEZ17	PEZ21	GEN

Sire													
Dam													
Pup													
Pup													
Pup													
Pup													

If you would like the AKC to evaluate the parentage of a dog or litter for you, we offer a **Parentage Evaluation Service**. Based on AKC DNA Profiles, a DNA Analyst will examine the profiles of sire, dam and pups and issue an evaluation of the parentage. The cost is $40 per litter. This fee does not include the processing cost of DNA Profiles.

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