

## **Musladin-Lueke Syndrome (previously Chinese Beagle Syndrome)** **By Samantha Goldberg BVSc MRCVS**

A few years ago beagle breeders in the USA and Canada stepped forward and said they wanted to stop producing puppies with so-called Chinese Beagle Syndrome (now more correctly named Musladin-Lueke Syndrome). They enlisted the help of a scientist called Dr Mark Neff to collect DNA samples and look at the genetics of the condition. Fortunately for the breed this condition was found to be a recessive disorder and a DNA test was developed from the research, which is now available commercially at The Veterinary Genetics Laboratory at UC Davis.

MLS is a genetic disorder, caused by a founder mutation (a gene mutation which has been dated to the foundation of the beagle population over 100 years ago) and having two copies of the gene results in a beagle born with several defects characterised by short outer toes on the front and sometimes all four feet giving a ballerina gait, high set creased ears on a flat skull with extra cartilage in them, slant narrowed eyes and very thick tight skin with little scruff. Such pups are small in stature with a very stiff gait BUT not all affected pups will show all these signs. They have a very good gregarious temperament although many have been reported to develop seizures. There are some clear dogs that have conformational defects as above so we must be careful and not assume anything unless a dog has been DNA tested.

This condition was always assumed by breeders here not to be present in the UK BUT it is actually present worldwide and two UK breeders stepped forward in August 2010 and publicised it here so that the beagle people were aware of it. Since the news broke there have been several people who feel they may have seen it over the years in the UK and reports of beagles in packs having it so it likely as in other countries that we have had it unrecognised for some time. Now that testing is underway it has been confirmed that there are carriers present in the UK beagle population and also people abroad have begun testing to see what their status is.

Dr Neff along with others has published a scientific paper describing the distribution as being seen in many countries and unique to beagles. It is likely to have originated as a single mutation at the point the beagle was being developed and population spread around the world so probably the end of the nineteenth century. It is first described in the literature in the 1970's as being an incidence of 2-3% in the beagle population in Britain and Australia. The November 2010 edition of Hounds talks about MLS and how the Masters of Beagles should be looking at the condition and avoiding breeding cases.

There are two human diseases, which are similar called "Stiff skin syndrome" and Geleophysic dysplasia both of which are rare inherited disorders. MLS sufferers have a thick inelastic skin, and thick fibrous muscles with little flexion even under anaesthesia. This leads to the stiff gait and also the hard inflexible abdominal wall. The facial features are produced as the bone is very dense and the ears and skin thickened pulling back the skin and hence the slanted eyes.

Lynn Bailey has set up a web site [www.salenko.co.uk](http://www.salenko.co.uk) that discusses the condition and how to test for it. There is a large searchable database on there which breeders can use a tool in their breeding. Obviously eventually we would like to eliminate the gene but we must not dismiss our carriers (please see Wendy Hall's excellent article for a discussion of this). The only way to know which beagles are carriers is to test using the VGL DNA test. The gene causing the mutation is a recessive one so both parents need to be carriers to produce affected puppies. A recessive gene is one that is hidden (as opposed to a dominant gene which produces visible characteristics). For a discussion of genetics please see the web site. We can use the test to mate clear dogs to carriers and not lose important features of the carriers. Testing is simple and inexpensive so lets not pretend this is not here but test if possible. Pups may be tested before they are sold, as the only criteria are not to have eaten or drunk for 60minutes before the swabs are taken.

Very importantly the Kennel Club have agreed to accept our testing for their database which means that the results will be published on registration papers. Genetically clear puppies that will not need testing will be recorded once both parents are recorded as tested clear. Do send your results to us for recording and include permission for the KC to be sent the results.