

A research update

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In view of the enormous public contribution and support towards the ‘DNA for Healthy Cavaliers’ project, we would like to thank everyone involved and summarize the current position with respect to the collection of samples from dogs that have received MRI scans. We are delighted that our two distinguished collaborators, Dr Guy Rouleau a world renowned ‘gene-finder’ and Dr Sarah Blott, an expert in quantitative genetics, will be speaking and answering questions about our genome research and how it is being carried forward to help dogs, owners and breeders at the Veterinary Satellite Meeting, Rugby, UK on the 26<sup>th</sup> October. This is part of International Syringomyelia Symposium 2007 organized by the Ann Conroy Trust in association with the University of Birmingham and the Society of British Neurological Surgeons and the Spine Society of Europe. Further details can be found at [www.syringomyelia2007.org](http://www.syringomyelia2007.org)

**CKCS genealogy and MRI-confirmed DNA collection**

A genealogy of more than 10600 related CKCS dogs spanning 24 generations across 3 continents (North America, Australia and Europe) has been constructed from over 600 MRI-confirmed cases. The data is stored in an Access database containing phenotypic descriptors, information on DNA availability, and filial relationships (Rusbridge et al 2005). It provides baseline data for further studies that are important for investigating this complex, late onset condition. Since the high incidence of the CM/SM was established in CKCS (Carruthers et al 2006), emphasis has been placed on identifying suitable dogs for a genome scan from the point of view of familial relationship or absence of CM/SM and other phenotypic parameters. We have established a world-wide collection of DNA samples of over 1500 samples mainly from the CKCS breed. Of these approximately:

- (i) 160 clinical cases were collected by Dr. Clare Rusbridge from the Stone Lion Veterinary Clinic (archived by UK DNA Archive, Manchester University, additional storage TDDS Laboratories, Sussex).
- (ii) 230 DNA samples were provided from breeders in the Netherlands who were screening dogs by MRI for their breeding programmes ([www.cavalierkingcharlesgilde.nl/](http://www.cavalierkingcharlesgilde.nl/)) DNA was archived by Utrecht University, Netherlands and organized by Dr P Mandigers.
- (iii) 50 samples were provided by Dr. Olby from North Carolina State University leading the project “The Effect Of Chiari I Malformations on CSF Flow In Cavalier King Charles Spaniels” funded by the American Cavalier King Charles Spaniel Club Charitable Trust ([www.ackcsccharitabletrust.org/ncsu-flowreport.htm](http://www.ackcsccharitabletrust.org/ncsu-flowreport.htm))
- (iv) 15 samples from Ohio University Syringomyelia research initiated by the ACKCSC Charitable Trust and supported by Cavalier Health Foundation (Grant 105 [www.cavalierhealthfoundation.com/grants.htm](http://www.cavalierhealthfoundation.com/grants.htm))
- (v) 145 were collected by dedicated breeders and pet owners worldwide, demanding a great deal of commitment, time, effort and often personal expense.
- (vi) 45 samples from 9 other brachycephalic breeds affected with CM/SM of various degrees of genetic relatedness to the CKCS including King Charles spaniels, Yorkshire terrier, Staffordshire Bull Terrier, Boston Terrier, Griffon Bruxellois, Chihuahua, Bichon Frise, and French Bulldog.

An additional \$8,000 award towards DNA archiving has been received from the Cavalier Health Foundation USA (Grant 104 [www.cavalierhealthfoundation.com/grants.htm](http://www.cavalierhealthfoundation.com/grants.htm) )

Blood tests in the UK were funded by the parent Cavalier Club supported by Boehringer-Ingelheim.

**Table 1.** Summary of Cavalier King Charles Spaniels genealogy content (April 07)

<b>Genealogy database content</b>	<b>Total</b>	<b>Males</b>	<b>Females</b>	<b>With DNA</b>
Number. of dogs	10636	3712	6924	1546
Number. of CM/SM cases *	604	267	337	998
CM/SM MRI-confirmed cases	408	182	226	385
Number of MRI SM clear cases	215	97	118	163

\*diagnosed and treated medically without MRI confirmation or MRI report incomplete for project inclusion.

An amazing 83% of the cost of MRIs has been paid for by owners, some breeders scanning over 10 dogs in their kennels. A fantastic ‘finale’ to the genome research funds was demonstrated recently by the generosity of members of CavalierTalk [www.cavalierstalk.com](http://www.cavalierstalk.com) and Cavalier Connection <http://www.ckcsboard.com/messageboard/> who raised a magnificent \$1,250 to pay for a specific MRI of a dog in Los Angeles requested by us. Sincere thanks to contributors and Bruce Hassig for organizing this.