



Hepatic Disease Research Program Area

03113: Investigation of Candidate Genetic Variants for Copper-associated Hepatopathy in the Dalmatian

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Canine copper-associated hepatopathies (CAHs) are now being diagnosed at increasing frequency across North America. The Dalmatian breed is no exception with cases being regularly reported in recent decades. The balance between genetics and the environment is unclear. Increased levels of copper in commercial diets may exacerbate a fragile genetic predisposition. Other studies around the world suggest that even in breeds with an obvious genetic component, that strong genetic modifiers might reduce the impact of a strong disease-associated variant. Investigators' previous AKCCHF-funded study indicates a very strong genetic component to CAH in the Dalmatian, with several lines affected and a shortlist of candidate genetic variants that require further investigation to support their credibility. The research team has observed some family-specific changes associated with copper processes and further work is needed to understand their significance by interrogating the regions around some candidate variants that do not reside in genes. In the next phase of the study, long-read sequencing may help us to link isolated variants to genes, and fill in sequence gaps for some dogs. This powerful technique enables continuous reads for a great distance along DNA, and will confirm and extend our findings, and bring us closer to an explaining CAH in the Dalmatian. Lifelong copper chelation and dietary modifications can provide relief, but early diagnoses and treatment are essential to avoid fatality. As in all breeds, CAH in the Dalmatian is complex and well-understood genetic test(s) will be a major step towards the eradication of liver copper disorders from the Dalmatian breed.

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