PROGRESS REPORT

Investigating Cancers and Exposure to Environmental Chemicals

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Morris Animal Foundation-funded researchers at the University of Wisconsin, Madison, are working to better understand how dogs break down toxic environmental chemicals. The team is focusing on an important family of enzymes called glutathione S-transferase enzyme or GSTs. When dogs or humans are exposed to toxic chemicals in the environment, they use GST enzymes to break down and neutralize those chemicals. When GST enzymes are not working, toxic chemicals sometimes lead to cancers such as lymphoma or bladder cancer.

The team is testing how well four major GST dog enzymes neutralize several common environmental chemicals, including those found in tobacco smoke and yard products. They want to get a clearer picture of whether individual dogs with low-acting GSTs may be sensitive to specific chemicals and, as a result, more susceptible to developing environmentally associated cancers.

So far, the team is looking at data on low-functioning variants in canine GSTs and screening GST activity in known environmental cancer-causing toxins. Findings will provide a foundation for more targeted research on environmental chemical exposures, GST genotypes and cancer risk in dogs. The researchers' ultimate aim is to provide veterinarians with evidence-based prevention strategies to share with their clients, so pet owners have the tools they need to minimize certain cancer risks in their dogs.

Thanks to the Portuguese Water Dog Foundation and to other generous sponsors of this study!