

Man's best friend and Medical Genomics May Offer Clues in the Fight Against Cancer

ANYONE WHO has ever spent time with a West Highland White Terrier knows how much energy and excitement these little dogs have for life. Darwin Reedy's Westies, Maggie and Molly, are no exception. "Molly has always had a real push to be around people, they make her so happy, she's always wagging her tail." So when Maggie was diagnosed with bladder cancer four years ago, Reedy was devastated. She died two years later, after taking many medications and enduring several surgeries.

One month after Maggie died, Reedy found out that Molly also had bladder cancer. He was determined to do everything possible to help her survive, so he took her to the University of Minnesota where she underwent surgery and six rounds of chemotherapy. Reedy's concern was for the life of his beloved dog, but little did he realize that his ailing pet could play a critical role in the study of medical genomics and saving humans.

Elizabeth McNiel, D.V.M., is a veterinary oncologist at the University of Minnesota's College of Veterinary Medicine. She treated both Maggie and Molly with chemotherapy for their bladder cancer. McNiel works with dogs like Molly and Maggie to determine the causes of cancer in dogs. She believes that her work may shed light on what causes cancer in humans. "A lot can be learned from studying cancer in dogs," says McNiel. "Dogs develop cancer spontaneously just like humans, that can't be duplicated in lab mice. Also, dogs share the same environment and are exposed to many of the same things humans are." Another advantage of studying genomics and cancer in dogs is that many dogs come from large families with well-developed records and pedigrees, making it easy to track their family health histories. Further, since breeds of dogs vary in their susceptibility to various cancers, it is easier to identify what genes predispose them to different cancers, which may help identify cancer-causing genes in humans.

McNiel is currently doing research funded by the National Cancer Institute on hereditary stomach cancer in Chow Chows, a Chinese breed of dog that has been domesticated since about 300 B.C. McNiel is looking at both environmental and genetic factors to determine why these dogs are more susceptible to stomach cancer than other breeds of dogs. Researchers know that human and dog stomach cancers are caused by the same gene, so McNiel is collaborating with human cancer experts to learn more about the role of genetics in stomach cancer.

"Studying cancer in dogs may shed light on what causes cancer in humans. We know that human and dog stomach cancers are caused by the same gene, so by combining our research in dogs with human cancer research findings, we can learn more about the role of genetics in stomach cancer."

— Elizabeth McNiel, D.V.M.,
veterinary oncologist,
University of Minnesota,
College of Veterinary Medicine

For Darwin Reedy, this kind of cancer research in dogs is crucial, not just for the potential implications it has on human cancers, but also for the impact it could have in improving Molly's quality of life. It has been six months since she underwent her last round of chemotherapy and she is surviving. Reedy says she is a real fighter. "Her attitude is, 'I'll keep fighting'." Research and medical genomics can help Molly win this fight.

The Minnesota Partnership for Biotechnology and Medical Genomics is a Minnesota initiative leveraging the scientific leadership of the University of Minnesota and Mayo Clinic into a powerful research collaboration.

For more information visit:
www.MayoUMinnesotaPartnership.org