

## **Transcript of 2021 3MT® presentation by Vanessa Huntley, MSc Biomedical Sciences candidate at the University of Guelph**

Hi everyone, my name is Vanessa, and I am going to be sharing with you my research on bone cancer in dogs. Blood is made up of many things, red blood cells are a major component, and we all know that because our blood is red when we get a cut or scrape that causes us to bleed.

But did you know that there's also thousands and thousands of white blood cells present when you bleed? These white blood cells, invisible to the naked eye are a crucial part of the immune system. So, what does the immune system do? Many of us know that the primary job of the immune system is to protect us from viruses and bacteria that make us feel sick. Something that you may not know is that the immune system also plays an important role in protecting us and our furry companions from cancer.

White blood cells help to destroy cancerous cells before they grow and spread to other parts of the body. Until recently, we thought that white blood cells in the immune system always played a part of in protecting from cancer, but more research has shown that these cells can actually help cancer grow and spread.

So, this raises a big question. Do white blood cells of the immune system provide protection from cancer, which they are supposed to do, or do they make it worse? To start tackling some of these important questions, we wanted to look specifically at bone cancer in dogs, a primary focus of research in our lab, and see if there is any relationships between the number of white blood cells that dogs have and how aggressive their bone cancer is.

In order to investigate this, we looked back at the medical records of over 150 dogs diagnosed with bone cancer that were treated here, at the Ontario Veterinary College. What I found by looking back at these records, it's shown on the diagram on the right side of the screen. When dogs had a higher number of these white blood cells circulating in their body, their cancer was more aggressive, meaning it spread to other parts of the body like the lungs, faster. And they died sooner than dogs who had a lower number of these white blood cells. Now, well this a trend we see, we still don't know why or how white blood cells maybe be contributing to bone cancer growth.

So, how can this information help? Well, if we can predict how their cancer will progress, we can make informed decisions on how we should treat them. For example, if we have a dog with bone cancer that comes in for treatment and we do blood work and see that they have a higher number of white blood cells in their body, we might try more of aggressive approach at treating our cancer because we expect their cancer to be more deadly.

These results also open more doors to be explored on why this relationship may exist, how white blood cells can interact with cancer, and possibly new ways we can treat bone cancer in dogs and improve the survival of our furry companions.

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