

# Giant Platelets in Cairns – Do They have a Disease or Not?

by Pat Joyce

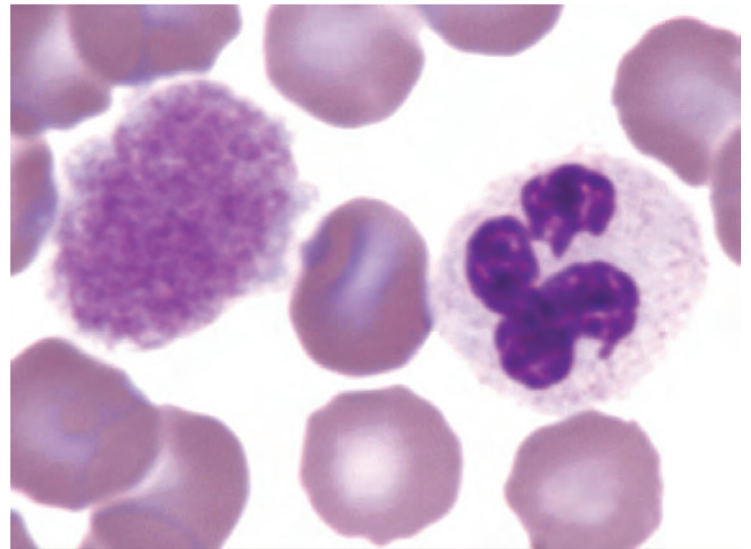
A principle of science is that we learn about the world by being able to measure it. Many Cairn owners have received abnormal lab reports on their apparently healthy dogs that announce a condition called Congenital Macrothrombocytopenia or Giant Platelet Disorder. Recently on social media, several people asked about this condition. They wondered if their dog was sick or not since a lab test returned as abnormal.

When a CBC (complete blood count) is done on human or dog, the test gives a series of measurements on the cells of the blood. There are white blood cells of various types that fight infection. Red blood cells that contain hemoglobin and carry oxygen to the tissues. And there are small snippets of cells called platelets that float along doing nothing until they are activated to clump together when there is a need to prevent or stop bleeding. Additionally, blood contains proteins manufactured in the liver and which work with the platelets to clot blood. Genetic absence of these clotting proteins results in a series of diseases called hemophilia. If there is absence or poor function in either the platelets or the clotting proteins, a human or dog could be at risk of life-threatening bleeding. Low platelet counts with risk of bleeding can be caused by infections, medications, immune disorders, and malignancies.

So, what is this about abnormally low numbers of giant platelets in some of our dogs?

Congenital Macrothrombocytopenia means that a dog has a genetic condition where the platelets manufactured are abnormally larger but also fewer in number than found in “normal” blood. On a blood smear (see picture) giant platelets will be seen. The CBC results come back abnormal in the specific categories that measure the size and number of platelets. But is this a disease?

Recently several commercially available screening panels for genetic diseases in dogs include a test for the  $\beta 1$ -tubulin gene as a marker to identify carriers of this platelet condition. The work on this genetic test was prompted by the frequency of giant platelets found in other dog breeds. Cavalier King Charles Spaniels have this condition in as much as 90% of all dogs. Cavaliers are asymptomatic for bleeding problems as are Cairns and other breeds who may have this gene. The dogs have normal tests for platelet function and for time to stop bleeding, even though



Giant Platelet next to normal RBC and WBC (Image copied from JW Harvey, *Veterinary Hematology: A Diagnostic Guide and Color Atlas*, published 2012)

the platelets are gigantic and fewer in number. Even if the CBC is abnormal and the gene for mutated  $\beta 1$ -tubulin are present, the affected dogs appear to be completely healthy. If no CBC or screening test had been done, the dogs would not be suspected of being “abnormal” in the first place.

So, what are we to do if our Cairn comes back with abnormal values on CBC or on one of the gene screening panels? It is thought that Congenital Macrothrombocytopenia is transmitted as an autosomal dominant disorder. If an abnormal CBC is noted and we breed the dog or bitch, we may transmit the gene and the expected abnormal lab findings to the next generation. Or not, depending on the laws of probability since some dogs may only be carriers (having the gene but without evidence of abnormal platelets). Since dogs with the gene are otherwise without any abnormal bleeding disorder, finding a condition like this is usually termed “incidental” by medical professionals.

Normal? No, it is not. But nothing to worry about either. At least as far as veterinary researchers currently know.

*Editor's Note: The opinions expressed in this article are solely those of the author and do not express the views or opinions of the Cairn Terrier Club of America.*