

LAD-III (LAD –I Variant) in German Shepherd Dogs

A combined leukocyte/platelet disorder has been identified in a German Shepherd Dog associated with a mutation in the gene encoding Kindlin-3. Kindlin-3 is a signal transduction protein vitally important for mediating integrin activation in platelets and leukocytes. Starting at 6 months of age, the affected dog had persistently increased white cell counts and persistent infections that involved the skin, feet and gingiva that were often accompanied by fever as well as abnormal bleeding. The affected dog was euthanized after developing profuse hemorrhage after a laceration on the lip at 6 years of age. A male sibling of the affected dog bled to death at 3 years of age.

Platelets are small, circulating cytoplasmic fragments that are the first line of defense in stopping the flow of blood from injured blood vessels. An important aspect of platelet function is their ability to stick to each other (aggregate) and plug holes in damaged vessels until blood clotting and tissue repair can occur. The platelets in affected German Shepherd Dogs are unable to respond properly to any platelet activating agent because of a dysfunctional or missing Kindlin-3 protein. Kindlin-3 is necessary for transmitting signals to the platelet surface that allow the platelet to bind fibrinogen and aggregate. Kindlin-3 is also important in transmitting signals to the surface of leukocytes needed for them to leave the blood circulation and enter tissue for fighting infections. Therefore, these dogs are at increased risk for spontaneous hemorrhage and are at high risk for excessive hemorrhage as a result of injury or surgery. They are also at high risk for infections and have persistently increased white cell counts even when treated with antibiotics.

By using DNA testing, affected and carrier animals can be identified by submitting a blood sample through the mail. Carrier detection is vital in controlling spread of inherited defects and DNA testing is the only reliable method of detecting these animals.

The sample required for testing for LAD-III in German Shepherd Dogs is a 2 ml EDTA tube (purple top) containing at least 1 ml of whole blood. Care should be taken to not cross contaminate samples during collection, particularly if more than one dog is collected at the same time. Samples should be labeled clearly so that there is no confusion regarding sample identification. Take care to make sure tubes are protected well to prevent breakage during shipping. The fee for testing is \$100 per sample. **Make checks payable to: Auburn University, Department of Pathobiology.**

LAD-III Test Form

This document should be used when submitting samples for testing.

Please provide the following information on each dog being tested:

Name and Registration Number _____
(if available)

Breed _____

Male or Female (Circle one)

Age at time of sampling or Date of Birth _____

Name and Registration Number of Sire _____

Name and Registration Number of Dam _____

Owner's Name (print clearly) _____

Date _____

Veterinarian/Requester Telephone number _____

Veterinarian/Requester Email address _____

**Name and Address results
should be sent to:
(print clearly)** _____

Send samples to: Mary K. Boudreaux, DVM, PhD
Department of Pathobiology
166 Greene Hall
College of Veterinary Medicine
Auburn University, Alabama 36849-5519
(334) 844-2692

email: boudrmk@auburn.edu

FAX: (334) 844-2652

The fee for testing is \$100 per sample. Sample is EDTA whole blood (1 ml).

Make checks payable to: Auburn University, Department of Pathobiology.

Turnaround time for results is typically 3 to 5 working days.