Located in the Department of Pathobiological Sciences of the School of Veterinary Medicine at the University of Wisconsin-Madison, the well-established laboratory of Dr. Ronald Schultz has performed diagnostic testing as part of our research program for decades. In collaboration with industry, we have contributed to the general health of dogs and cats through improved vaccines, and development of diagnostic kits. Many years of study have led us to advocate refined vaccination schedules based on actual risks and benefits for our animal companions, whether sheltered or homed. Thanks to the generosity of Maddie's Fund, we are now able to expand our services in support of health care for sheltered dogs and cats across the country and to be able to provide timely information for shelter care givers.

What is Maddie's® Laboratory's mission?

In most shelters, outbreaks or continuing occurrences of diseases such as canine distemper and feline panleukopenia are often diagnosed clinically and with the aid of various diagnostic tests that are available in kit form, and/or through diagnostic laboratories. However, once shelters have a diagnosis, they frequently lack guidance to manage the outbreak in a manner that will result in the fewest number of deaths from disease and/or euthanasia. Shelter personnel, such as veterinary technicians, veterinarians, and managers, need information on which animals are susceptible to the disease and which are protected from the viruses causing the outbreak. Furthermore, information is not always available on how to prevent future outbreaks of the same disease, thus multiple recurrences can be frequent over the course of a year.

The services provided by the Maddie's® Laboratory are designed to provide the most accurate information on managing disease outbreaks in shelters. More importantly, the laboratory will attempt to

find methods and programs that will reduce or eliminate future similar outbreaks in that specific shelter as well as in shelters with similar disease outbreaks.

Canine Antibody Testing: Frequently Asked Questions

1. **What is the appropriate procedure for collecting and shipping blood for antibody testing?**

   Collect 1 to 3 mls of blood in a sterile tube (red stopper or serum separator) and allow it to clot. The blood tube can be shipped with the clot, but separated serum (without the clot) is a much better sample. Wrap sample tube in padding, such as paper towel, and place in a plastic zip-lock bag in a sturdy shipping container. It can be sent without cold packs if necessary, but a cold pack wrapped with some newspaper is ideal. Separated serum samples may be frozen before shipment, but serum still on the clot must not be allowed to freeze, as this causes the sample to become strongly discolored. The sample should be sent to arrive 2 days (no later than 4 days) after collection. Please keep in mind that our lab does not accept sample submissions on the weekends.

2. **What is the benefit of antibody testing? Why not just revaccinate?**

   Antibody or titer testing is much safer than revaccinating an already immune animal. Although the potential for the vaccine to cause an adverse reaction is low, if the animal does not need the vaccine, this risk is completely unnecessary and the dog should not be vaccinated! The canine viruses which cause distemper (CDV), parvoviral enteritis (CPV-2), and infectious hepatitis (CAV-1), along with rabies virus, have a high correlation between presence of antibody and protective immunity. The two antibody tests that are most often recommended in lieu of revaccination are for CDV and CPV-2, as explained in detail below. When the tests show the animal is protected by antibody, there is no need for revaccination. Whereas, when the tests show the animal does not have antibody, the animal should be vaccinated, as CDV and CPV-2 cause

severe, life threatening diseases that often result in expensive treatment procedures and high morbidity even with treatment. Some dogs that survive will have lifelong neurologic problems (especially survivors of CDV).

3. **How often should I perform an antibody test for canine distemper (CDV) or canine parvovirus-2 (CPV-2)?**

The most important time in the life of a dog to perform an antibody test is 2 or more weeks after the last puppy dose of CDV/CPV-2, which should be given at 14 to 16 weeks of age or older. The reason this is important is to ensure your puppy is immune to these two life threatening diseases. If the dog does not have an antibody titer, it should be revaccinated immediately and retested 2 or more weeks later to ensure immunity has developed. These two viruses are much more likely to cause severe disease and death in the young animal, but they can cause disease and death at any age if the animal is not immunized (has not developed antibody to the viruses). When demonstrating antibody after the series of puppy vaccinations, you can test the dog again in a year. If the dog is immune, you need not repeat testing more often than every 3 or more years.

4. **Which viruses are worth testing for, and which aren't?**

With regard to vaccinal immunity or protection from disease, the serum (blood) tests that are most significant are for CDV and CPV-2, CAV-1,-2, and rabies (because they correlate with protective immunity). Antibody titers for other canine diseases are not of value in determining protection, but they can be important in *diagnosing* diseases (e.g. leptospirosis). It is important to understand rabies antibody tests, which are only performed by certain laboratories, **cannot be used in any state** in lieu of revaccination. All states require that dogs remain current on their vaccinations. Rabies vaccines should not be given prior to 12 weeks of age; the dog must be revaccinated in a year, and then revaccination should be every 3 years!

5. Do I need to perform a titer for canine adenovirus 1, 2 (CAV-1, -2)?

CAV titers *can* be performed, but they don't *need* to be performed, because:

A. Most dogs will respond to the CAV-2 in the combination vaccine that also contains CDV and CPV-2.
B. CAV-2 is a common respiratory virus of dogs and even dogs that don't get vaccinated will get naturally infected via contact with other dogs.
C. Antibody against CAV-2 is protective against CAV-1.

However, if you want to know the immune status of your dog for CAV-1, -2, an antibody test can be performed. Those dogs living in or visiting states bordering Mexico or Canada should be aware that CAV-1 (infectious canine hepatitis) remains a significant disease of dogs in Mexico, and CAV-1 also remains a disease of wild foxes in Canada. Therefore, we continue to include CAV as a core vaccine! Every dog should receive it.

6. What do my serology results mean?

Depending on the type of antibody test performed, the results may be reported as yes or no, or they may be reported as a dilution (e.g. 1:80, 1:256) or reported as a titer (e.g. 80, 256). However, the important thing to understand is that if the CDV or CPV-2 test result is positive or the dilution is equal or greater than 1:8 or 8 for CDV or 1:20 or 20 for CPV-2 in a vaccinated dog over 4 months old, the animal has protective immunity. If the results are negative, <1:8 for CDV or <1:20 for CPV-2, the dog should be revaccinated and retested to ensure that it responds to the vaccine. We have found that in the general US dog population; there are an estimated 1 in 1,000 dogs that cannot develop antibody to CPV-2 and 1 in 5,000 dogs that cannot develop antibody to CDV due to genetic factors. We haven't found a nonresponder to CAV-1, -2; therefore they are likely to be much rarer, estimated at 1 in 100,000. We also know that unresponsiveness occurs for other vaccines as well. The genetic non-responder is more common in certain breeds and

much more common in certain families of dogs. Genetic non-responders to CPV-2 were more common in the Rottweiler and Doberman breeds when CPV-2 first started infected dogs in 1978. Today, because of natural elimination of those non-responders, we don't find those two breeds have any greater number of non-responders.

7. **What vaccine should I use to revaccinate after a negative test result?**

Some owners prefer to revaccinate with a vaccine containing CPV-2 or CDV only (monovalent) when their animal doesn't have immunity to that virus. It is uncommon for a veterinary practice to stock monovalent vaccines. If the owner prefers a single viral component, we can send a dose of the monovalent vaccine to the veterinarian for a $25 handling charge.

Additional information regarding vaccination guidelines and a discussion of antibody testing can be found at http://www.wsava.org/VGG1.htm and http://www.aahanet.org/publicdocuments/vaccineguidelines06revised.pdf.

Maddie's® Laboratory, Department of Pathobiological Sciences, UW Madison School of Veterinary Medicine