Your Continuing Contribution to Veterinary Medicine

More than twenty years ago, the Division of Comparative Pathology established a new section in our laboratory with the goal of providing a strong avian, exotic, and wildlife diagnostic test array to meet the changing needs of our veterinary clients. The response of the veterinary community has been exceptional. The wealth of unique samples that have been submitted to our laboratory as well as the funds derived from performing the clinical tests has combined to provide numerous opportunities to perform valuable research studies and further the field of veterinary medicine. Your contributions have been invaluable.

We know there are many options open to you in the selection of laboratories to perform your diagnostic testing. We value your continued consideration of our services and welcome your collaborative efforts in furthering the field of avian, exotic, and wildlife medicine.

Our commitment to specialized veterinary medicine:

- 88 presentations at national and international meetings
- 91 journal articles
- 5 book chapters

Leading in research and test development -- thanks to your support.

See more about our lab at [www.cpl.med.miami.edu](http://www.cpl.med.miami.edu)
Contact us at (800)596-7390 or compathlab@med.miami.edu
Encephalitozoon cuniculi Panel

About the Assays

The antibody tests are performed in the ELISA format and results are currently reported as titers for IgM and IgG – meaning the sample is diluted and tested through the endpoint of its reactivity on the ELISA. CRP is a standardized automated assay providing quantitative results reflective of systemic inflammation.

Sample Collection and Submission

Fresh non-hemolyzed serum or plasma samples are desirable. Freezing should be considered if shipping delays greater than 4 days are present. All samples should be centrifuged and separated to a size appropriate transport tube even if a gel separator is present in the tube.

Interpretation of Results

It is common to find IgG seropositive rabbits. However, those rabbits which are infected are more likely to be seropositive and carry significantly higher titers of IgG and IgM antibody. Titers equal or greater than 1:64 for IgM and 1:512 for IgG reflect a positive predictive value of 88-90%.

CRP is a major acute phase protein in rabbits. This biomarker will increase with systemic inflammatory processes. While not diagnostic of ECUN infection, the elevation of this protein will be supportive of infection and results can be interpreted in conjunction with IgG and IgM titers. When elevated CRP is present with either or both aforementioned titers for IgM and IgG, the test specificity ranges from 97 to 100%. In addition, acute phase proteins can provide key prognostic value. With a positive response to treatment, CRP levels can drop within 24 hours where antibody titers can take a several months to significantly decrease.

Contact the laboratory for more information.

References


Acute Phase Protein Laboratory

The Acute Phase Protein Laboratory was established in 2010 after a lengthy research investigation to implement and validate new methodologies. Acute phase proteins (APP) are valued biomarkers in human medicine and have been commonly used in all areas of veterinary medicine in Europe for many years. These assays were not available in the United States until now.

APP are key markers of an inflammatory response. APP are commonly increased with trauma, infection, stress, neoplasia, and inflammation. This pathway to restoring function and healing is found in all animals and man. While these proteins are not specific for a particular disease, they have been valued in human and veterinary medicine for their sensitivity to underlying health problems. They are used as part of wellness exams where they provide valuable adjunct information to routine blood work like a complete blood count and biochemistry panels. In addition, in animals with acute or chronic disease, these markers have key value in prognostication. Since APP have a short half-life, the biomarkers drop very quickly with a positive response to treatment.

In addition to our work with rabbits (see adjoining article on ECUN panel), we have completed studies in the following species: ferrets, birds, bearded dragons, sharks, turtles, dolphins, manatees, elephants, alpacas, horses, and zebra. Check our website to find updates and publications.

Recent and Upcoming Presentations

Dr. Carolyn Cray presented “Application of Acute Phase Protein Biomarkers in Avian, Exotic, and Wildlife Species” at the meeting of the 16th Biennial Congress of the International Society for Animal Clinical Pathology held at the University of Copenhagen in June. She also was the coordinating speaker for the closing presentation entitled, “The Clinical Laboratorian as an Agent of Transformational Change.” The meeting had over 100 attendees from 24 countries and featured excellent presentations on animal clinical pathology with an emphasis on acute phase proteins. The society has a long history of facilitating global scientific exchange and promotion of networking of clinical pathologists.

At the recent Association of Avian Veterinarians conference, Dr. Cray also presented her collaborative work on acute phase proteins in a presentation entitled, “Comparison of Acute Phase Proteins and Protein Electrophoresis Assays in Penguins” in collaboration with Drs. Bossart, Clauss, and Field and Ms. Lynda Leppert of the Georgia Aquarium. In the upcoming joint AEMV/ARAV/AAZV meeting in Orlando, Dr. Cray will present the “Utility of IgM Titors with IgG and CRP Quantitation in the Diagnosis of Suspected Encephalitozoon cuniculi Infection in Rabbits” and “Protein and Cholesterol Electrophoresis of Plasma Samples from the Cownose Ray (Rhinoptera bonasus). Many thanks to all of our collaborators.
Proud Sponsor of the 2014 AAV and Joint ARAV/AEMV Meetings

We are pleased to again sponsor a sessions at the annual AAV and ARAV/AEMV meetings. This year we had the honor of sponsoring the Research Session at AAV. We will sponsor the Pathology Session and the Joint ARAV/AEMV Session in Orlando. As always, you will find our laboratory service represented in the exhibit hall. Please stop by to get all the latest news and updates on our clinical and research programs.

Acute Phase Proteins and Electrophoresis: Time to Update Your Routine Bloodwork Panel

With the advent of new technologies, protein electrophoresis (EPH) is now routine in many laboratories and has been found to be very helpful in avian medicine. EPH profiles the acute phase response providing the only valid quantitation of albumin, an important negative acute phase protein, and globulin fractions which represent the positive acute phase proteins (APP).

In recent years, tests for specific APPs including serum amyloid A, C-reactive protein, and haptoglobin have been implemented for many species. In Europe, where these tests have been available for several years, they have become part of the routine bloodwork panel for companion animals and horses.

Like EPH, testing for specific APP provides a greater sensitivity for underlying inflammatory processes than following fibrinogen levels, total white blood cell counts, and neutrophils/band neutrophil counts. Major APP can increase rapidly after insult – long before changes in the CBC – and the magnitude of increase can be 10-1000 fold. Likewise, with a positive response to treatment, these markers drop rapidly. As with EPH, APP are not diagnostic for a particular disease, but can provide valuable prognostic information when repeated measures can be assessed during and after treatment. In addition, APP and/or EPH should be considered part of an annual blood work panel as well as part of a pre-surgery diagnostic panel or blood work conducted for other screening purposes.

We have been vigorously pursuing the validation of APP testing in a variety of avian, exotic, reptile, and wildlife species. If APP have not yet been implemented for your species of interest, EPH provides a valuable snapshot of an ongoing acute phase response. Contact the laboratory for more information.

Selected Citations from Our Laboratory


Dr. Cray was pleased to be a Scientific Committee Member for the 2014 International Society of Animal Clinical Pathology conference. The meeting was entitled, “The Frontiers of Veterinary Laboratory Medicine - Cutting Edge and Ideas for the Future - for Inspiration and Motivation”.
Zoobiquity at Work: The Story of Peanut of the Orangutan

When you work in a veterinary clinical pathology laboratory, you never quite know what might turn up as your next case. Two years ago, our colleagues at Miami’s Jungle Island inquired whether we might take a second look at some slides from one of their orangutans. We enlisted the help of one of faculty members in human hematopathology, Dr. Francis Ikpatt. He reviewed the sections prepared from intestinal tissue taken from Peanut during a recent emergency surgery for a possible intestinal blockage. Although all hoped for a report of normal tissue, the diagnosis was lymphoma.

Peanut is a 8-year-old female orangutan who lives with her fraternal twin. She is known for her friendly, curious personality and has gained fame for her use of the I-pad and sign language. She also enjoys painting and is a delight to visitors of Jungle Island.

Lymphoma has been described in great apes but usually in animals that are 30-40 years of age. Of course, the next question was what can we do? Our colleagues in the Department of Pathology pulled out all the tricks reserved for human tissue including immunohistochemistry and in situ hybridization to further type the cancer as diffuse large B cell lymphoma. With good research and clinical connections to the university’s Sylvester Comprehensive Cancer Center, we called upon our colleague and Chief of Hematology/Oncology, Dr. Joseph Rosenblatt, who is internationally recognized for his expertise in human oncology. Given the similarity of the orangutan to the human and with much consideration by all, Dr. Rosenblatt designed a treatment regimen analogous to that used in human lymphoma patients called R-CHOP, a combination immuno- and chemotherapy.

Peanut underwent 3 cycles of this therapy at monthly intervals. She remains clinically normal now more than 20 months after the last treatment delighting park visitors with her uncanny “human” abilities including painting. Young age, good health, immediate surgical intervention, and catching this at an early stage are likely all favorable to the continued health of Peanut. This case has been an excellent example of zoobiquity—where the commonalities between animals and humans can be used to diagnose and treat disease.

Look for more on Peanut’s diagnosis and treatment in an upcoming issue of the Journal of Zoo and Wildlife Medicine. Many thanks to the University of Miami team including Drs. Rosenblatt and Fonte and their staff and Drs. Ikpatt and Fan of the Department of Pathology, Knowles Animal Clinic, Miami Veterinarian Specialists, and Dr. Drury Reavill of Zoo/Exotic Pathology Services. We are grateful to Drs. Bern Levine, Susan Clubb, and Jason Chatfield of Jungle Island for the opportunity to assist in this case. Much credit also needs to be given to the husbandry and the orangutan enrichment teams at Jungle Island for Peanut’s excellent care.
Quality diagnostics with an active research program. An academic based laboratory service which provides routine and specialized test services while furthering the field of avian, exotic, and wildlife medicine.

Contact Us!

Client Services is available to serve you Monday through Friday. We can also be reached via the web.

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See you at Orlando!