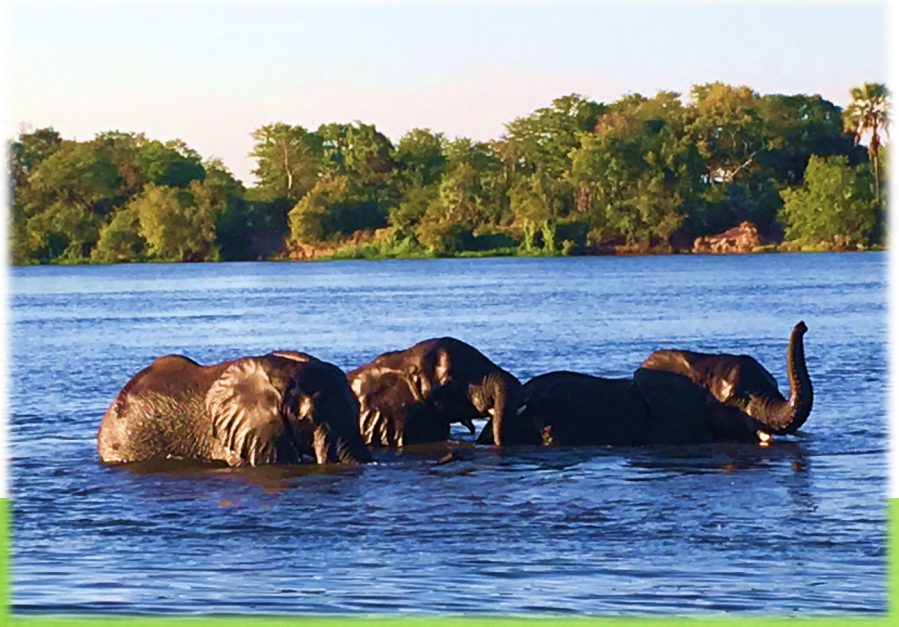

THE EEHV CONSORTIUM
PO BOX 37012, MRC 5508,
WASHINGTON, DC 20013-7012
NEHL at the National Zoo
2019. Vol 6 #1

The EEHV Consortium at National Elephant Herpesvirus Laboratory Update

USEFUL LINKS FOR EEHV PREPARATION

EEHV PLANNING PROTOCOLS REQUEST ACCESS ON WEBSITE

EEHV TESTING LABORATORIES

EEHV PUBLICATIONS .

The Search for Elephant Compatibility

Jennifer Kishbaugh, DVM

Animals needing blood transfusions are generally very ill, and the administration of a foreign blood product may worsen already critical animals if incompatibilities are not detected. For this purpose, BodeVet Inc. and the National Elephant Herpesvirus Lab (NEHL) are sponsoring a joint internship to evaluate blood compatibility between Asian elephants residing in North America. This information will be used to further define Asian elephant blood groups and to provide information for transfusion medicine to treat calves suffering from Elephant Endotheliotropic Herpesvirus Hemorrhagic Disease, to inspire future research in blood group identity in zoo animals, and to guide research in the underlying causes of elephant reproductive difficulties.

Blood group antigens can be demonstrated in virtually any species, with varying clinical importance between species and blood systems based on antigen immunogenicity. The clinical importance of certain blood groups is based on the incidence of the antigen in the population, the incidence of naturally occurring antibody within the population, and the effect of the antibody against the antigen in vivo. For instance, in canine medicine, while multiple blood group factors have been identified, only a few have been found to demonstrate clinical relevance regarding transfusion complications. Blood incompatibility occurs when proteins or other moieties found on the red blood cell membranes, white blood cell membranes, and in plasma trigger a transfusion reaction in animals. In Asian elephants, this phenomenon has yet to be thoroughly evaluated in scientific studies as transfusion reactions may take on many different, and sometimes overlooked, clinical syndromes which may be masked in the face of a systemically severe ongoing disease process such as EEHV.

It is unclear whether elephants produce naturally occurring antibodies to blood antigens that differ from their own. Although it is known that Asian elephants possess serologic evidence of blood groups, the identification of blood antigens which may cause transfusion reactions, and their antigenicity, has yet to be described. Sensitization and later exposure to blood antigens may result in the premature loss of transfused red blood cells, negating the positive effect of the transfusion even without obvious indications of a hemolytic transfusion reaction. This sensitization may have adverse effects on later pregnancy efforts as well, similar to incidences of neonatal isoerythrolysis in the canine and equine.

Along with evaluating blood group antigens from the perspective of transfusion medicine applications, there have been many developments in applying this knowledge to other aspects of disease. In human medicine, for example, neoplastic cells sometimes express altered blood group antigens; and though not yet definitively proven in veterinary medicine, blood group antigens may play a role in immune-mediated hemolytic anemia and could serve as markers of disease. This study aims to identify the presence of natural and acquired antibody formation directed towards erythrocytes as an initial step towards identifying Asian elephant red blood cell groups, to improve the standard of care provided to elephants in human care, and to encourage future studies exploring if and how blood groups may play a role in disease processes of Asian elephants.

For information regarding study participation, please contact jkishbaugh@bodevet.com or latimere@si.edu.

North American EEHV Advisory Group Meeting and EEHV Workshop, Houston Zoo March 26 – 28, 2019

Determined to find solutions to protecting elephants from Elephant Endotheliotropic Herpesvirus (EEHV), researchers, veterinarians, virologists, scientists, elephant care specialists, and conservationists came together for the bi-annual North American EEHV Workshop in Houston.

Attendees included 13 international representatives from countries including Thailand, Myanmar, India, Belgium, Denmark, Rotterdam, the United Kingdom, Canada, and Mexico. More than 100 experts from four continents participated and 20 more dialed into the meeting, which included presentations and discussions on the progress in scientific research such as improving detection and treatment protocols that have helped save some calves when the virus strikes. Often considered a high threat to Asian elephants, with increased surveillance the virus is being found in more African elephants, including two calves at the Indianapolis Zoo that died from the virus this month. By researchers sharing information globally, the elephant conservation and care community are finding ways to reduce the devastating impact of EEHV.

Workshop participants visited laboratories at Baylor College of Medicine, which is one of the leading research centers working on EEHV; and the Houston Zoo, where participants learned the latest techniques for training elephants to voluntarily participate in their care that includes regular blood samples and treatments when needed, in addition to a hand-on laboratory where participants practiced diagnostic techniques on blood samples.

Sponsors for the conference included Houston Zoo, Smithsonian's National Zoo, Elephant Managers Association, Oklahoma City Zoo and Botanical Garden, Fort Worth Zoo, Columbus Zoo and Aquarium, Albuquerque BioPark, Oregon Zoo, International Elephant Foundation, San Diego Zoo Global, the EEHV Consortium, and Linda Reifschneider in memory of Lily, Kenzi and all calves lost to EEHV.

About the EEHV Advisory Group

The mission of the EEHV Advisory Group is to decrease elephant morbidity and mortality due to EEHV while supporting elephant-holding institution programs by:

- Disseminating knowledge of current best practices for prevention, diagnosis, and treatment
- Providing private and public elephant-holding facilities with technical assistance; and
- Facilitating research by building international collaboration.

For more information about the EEHV and Advisory Group's work visit, **eehvinfo.org.**

EEHV Advisory Group

EEHV Consortium Members

- Birmingham Zoo
- Cleveland Metroparks Zoo
- Columbus Zoo And Aquarium
- The Dallas Zoo
- Denver Zoo
- Dickerson Park Zoo
- Fort Worth Zoo
- Fresno Chaffee Zoo
- Houston Zoo
- Indianapolis Zoo
- The Maryland Zoo
- Oklahoma City Zoo and Botanical Garden
- Oregon Zoo
- Point Defiance Zoo & Aquarium
- Reid Park Zoo
- Ringling Bros. and Barnum & Bailey
- Rosamond Gifford Zoo at Burnet Park
- Saint Louis Zoo
- Smithsonian's National Zoo and Conservation Biology Institute
- Toledo Zoo
- The Tulsa Zoo
- Zoo Miami

Upcoming Event:
Africa's First Elephant Endotheliotropic Herpesvirus (EEHV) Regional Workshop held in conjunction with the 16th International Elephant Conservation & Research Symposium
Limpopo, South Africa
October 24, 2019

EEHV was first identified in 1994, although the virus has been living in elephants for millions of years. Often observed as skin nodules on an African elephant's trunk or sides, in its more lethal form it has been the cause of death of multiple animals in captive settings as well as the wild.
Until now, most EEHV research has been focused on Asian elephants where an increasing number of calf deaths have been identified throughout Asian elephant range states. Recent fatal cases in young African elephants indicate the need to integrate the African elephant community into research efforts. Little is known about the impact of EEHV on elephants in Africa, as EEHV is not usually tested for in calf deaths. It is important that we work together as a community to fill that gap in knowledge.

Join us for Africa's first ever EEHV Workshop on October 24th, 2019. Planned in conjunction with the 16th International Elephant Conservation & Research Symposium in Limpopo, South Africa, this historic workshop is an important step towards integrating the African elephant community in range countries into the fight against this devastating disease. It is an opportunity for elephant managers, keepers, refuge directors, veterinarians, researchers, and others to learn about EEHV, how to identify the virus, best practices for treatment, and what they can do to help build upon the foundation of existing EEHV knowledge we have from years studying the disease in Asian elephants. In addition to sharing known information on the virus, the workshop will focus both on young African elephants in human care and on what we can learn from free ranging African elephants, acquisition of samples needed, and building a network of researchers, veterinarians, elephant managers, and conservationists in Africa.

For more information contact: Deborah Olson dolson@elephantconservation.org; Sarah Conley sconley@elephantconservation.org; Lauren Howard lhoward@sandiegozoo.org or Erin Latimer LatimerE@si.edu

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