

Bamboo -  
Herpes Informator

Request for EEHV testing

Department of Pathology  
Smithsonian National Zoo  
3001 Connecticut Ave. NW  
Washington, DC 20008  
(202) 673-4869

Date 27 April 04

Requestor's name Holly Reed, DVM

Institution Point Defiance Zoo & Aquarium

Address 5400 N. Pearl Street

Tacoma, WA 98407

Phone/email 253-404-3639 hreed@pdza.org

Animal Name/ISIS # "Bamboo" T05M10

Age 40 years

Species Asian Elephant

Reason for request (i.e. current symptoms of possible EEHV, or possible exposure to

EEHV) Pre-shipment Request

Type of samples being sent Serum

Before sending samples, please call Erin Latimer

202-673-4869 (W)  
703-471-2168 (H)

or

Laura Richman

301-398-4741 (W)  
301-253-8723 (H)

Please send samples overnight on dry ice in a sealed cooler. The best day to send samples is Wednesday, for Thursday delivery.

Clinical Pathology Records - Specimen Report  
POINT DEFIANCE ZOO & AQUARIUM

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ELEPHAS MAXIMUS (no subsp)  
Asiatic elephant  
Name: BAMBOO

Sex: Female  
Age: 41Y Est:      Birth: 1.Nov.1966  
Acc. #: T05M

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Collection Information >>

Health Status: Normal  
Fasting Time: < 8 hours  
Activity: Active  
Weight: 3760 Kg on 5.Nov.2003  
Manual restraint used.

Date of Collection: 19.Apr.2006  
Time of Collection: : 0.3  
Collected by: SS  
Sample Collection Site: EAR VEIN

Chemistry >>

Analysis Information >>

Chemistry Sample: Serum  
Storage: Frozen at 0.0C (32.0F)  
Sample Quality: No quality problems.

Laboratory: NAT'L ZOO  
Date of Analysis: 25.Apr.2006  
Time of Analysis:  
Analysis by:  
Automated analysis.

Tests and Results >>

EEHV (ELEPHANT ENDOTHEKIOTROPIC HERPESVIRUS)      LOW

Comments >>

Elephant Endotheliotropic Herpesvirus (EEHV) ELISA titer Low

EEHV titer perormed by:  
National Zoological Park  
Department of Pathology  
3001 Connecticut Ave., NW  
Washington DC 20008  
202-633-4252

For additional information: refer to the Elephant Husbandry Manual, AZA Standards for Elephant Management and Care, and the AAZV Preventive Medicine Recommendations.

## RECOMMENDED ELEPHANT PRESHIPMENT GUIDELINES

February 2003

Whenever possible, preshipment testing should be performed within 30-90 days of the anticipated shipping date (note: mycobacterial cultures require 60 days for final results).

Minimum Database:

1. **Signalment** - age, sex, origin, studbook#, ISIS#, picture of individual (as viewed from the front and sides) should be included in the permanent record.

2. **Anamnesis** - summary of information regarding previous health screens, medical problems, diagnostic test results, and treatment. In addition, the veterinarian should review the behavioral profile of the individual to be shipped.

Specific areas to be included:

- a. foot/skin conditions
- b. dental/tusk conditions
- c. history of colic, diarrhea, GI parasitism (including fecal parasite screens and Salmonella cultures)
- d. serologic status, if known (EMC, elephant herpesvirus, Leptospirosis)
- e. vitamin E status, if known
- f. TB culture from trunk washes (dates and results)
- g. reproductive history
- h. sedation/immobilization data

3. **Complete physical exam** - this should include a review of all systems.

4. **Body weight** - actual or estimated using body measurements.

5. **Blood collection**

- a. Complete blood count (CBC), serum chemistry panel.
- b. Serologic (ELISA) test for elephant herpesvirus (EEHV) - contact Dr. Laura Richman. <sup>2ml serum</sup>
- c. Bank minimum of 10-20 ml serum (duplicate sample for SSP serum bank) - all banked samples should be labeled with species, studbook #, age, sex, and date collected.

6. **Fecal analyses** -

- a. **Parasite screen** - Fecal samples should be collected every 7 days for a total of 3 weeks; direct, flotation, and sedimentation should be performed on every sample to detect intestinal parasitism.

**Holly Reed**

**From:** Darin Collins [Darin.Collins@Zoo.org]  
**Sent:** Wednesday, July 20, 2005 5:47 PM  
**To:** Holly Reed  
**Cc:** Kelly Helmick  
**Subject:** RE: bamboo shipment

Hi Holly:

See comment in red below. For your planning purposes, Kelly is your designated first contact for this shipment and I'm your back-up in the event that Kelly is unavailable.

Darin

-----Original Message-----

**From:** Kelly Helmick  
**Sent:** Wednesday, July 20, 2005 2:54 PM  
**To:** 'Holly Reed'  
**Cc:** Darin Collins  
**Subject:** RE: bamboo shipment

thanks holly. we should have the records copied by the end of the week. i will review them before sending them, send an email response to the questions below.

in my initial review, bamboo is living with chai, a female who spent time at dickerson park zoo (for natural breeding) - this zoo has a history of asian elephant herpesvirus. chai's baby - hansa - was born without incident or symptoms even remotely suggestive of elephant herpesvirus. Literature and supporting documents of elephant herpesvirus cases is supportive of older elephants manifesting herprevirus infections following a stressful move - this should be addressed in our contingency plans - maybe to have a dose of anti-virals on-hand or a known source identified in the event of symptoms supportive of EHV once Bamboo moves, ie. swollen, discolored tongue, ventral midline edema, anorexia due to unknown, etc.

there is an oral history of follicular vulvovaginitis in bamboo and her exhibit mates - this has been linked to a different herpesvirus in some african elephants rest of the info will come later. These cases were reported by Dr. Billy Karesh and published in JZWM - we can send the citation. The goal of the paper was to describe these lesions which were reported as not uncommon in captive elephants in NA zoos.

in today's meeting, it was determined that stewardship will be transferred beginning with bamboos arrival into her STALL at PDZA. therefore, myself and at least one other vet staff member will be accompanying the shipment. just fyi. Minutes from today's meeting were taken for distribution at a later date - we can forward, as could Karen G from PDZA. Good meeting which was focused entirely on the Communication Strategy of this move - no real animal health topics were discussed to any length.

once you have all the info and we have test results back, we should discuss the move in more detail.

thanks, K!

-----Original Message-----

**From:** Holly Reed [mailto:hreed@pdza.org]  
**Sent:** Tuesday, July 19, 2005 6:00 PM  
**To:** Kelly Helmick; Darin Collins  
**Cc:** Karen Goodrowe  
**Subject:** RE: bamboo shipment

Hi Kelly,

Here are my preshipment requests:

1. CBC/serum chemistry
2. Rectal culture for salmonella or other fecal pathogens
3. Fecal exam for ova and parasites - direct and floatation
4. Trach wash/TB test history - results and date of last test
5. EMC virus titers - if previously tested negative - what other elephants have been introduced since that test and what is their location history and titer status.
6. History for exposure to herpes.
7. Medical records - to review historical medical issues and how we can best prepare to receive and take good care of her.

Kelly, Darin and Karen,

Darin and I have spoken and will be arranging a time for me to come up to Woodland Park to discuss medical issues, visit the elephant barn, go over the plans that you decide on tomorrow and meet and possibly be there for Bamboo's pre-ship exam.

Here are my questions for the meeting:

1. How old is Bamboo?
2. What method of transport would be most appropriate?
3. Will Bamboo have an acclimation period to get used to walking in and out of the transport semi or travel crate?
4. Does she have any behavioral issues that would require the use of sedation before or during the transport (I prefer to transport with an alert, unmedicated elephant, personally)
5. Does she have any arthritis issues that would affect her ability to stabilize herself or rise up from laying down?
6. Is she currently on any medications that affect her level of alertness?
7. What is her response to new/novel situations or introduction of new adult elephants?

I am very sorry that I will not be able to attend Wednesday's meeting. Hope all goes well and I will wait to hear what you all decide. It is nice to be able to collaborate on this effort!

Holly

Holly Reed, DVM  
 Head Veterinarian  
 Point Defiance Zoo & Aquarium  
 5400 N. Pearl St.  
 Tacoma, WA 98407

(253) 404-3639 (o)  
 (253) 404-3631 (to be contacted by radio)  
 (253) 591-5448 (FAX)

-----Original Message-----

From: Kelly Helmick [mailto:[Kelly.Helmick@Zoo.org](mailto:Kelly.Helmick@Zoo.org)]

Sent: Tuesday, July 19, 2005 8:30 AM

To: Holly Reed (E-mail)

Cc: Darin Collins

Subject: bamboo shipment

holly - thanks for the phone response. probably best if you could fax or email a list of your questions or concerns, preferably before wednesday's meeting, and we can address those then and get that info back to you end of the week. thanks, k.

Kelly E. Helmick, DVM, MS  
Associate Veterinarian  
Woodland Park Zoo  
601 North 59th Street  
Seattle, WA 98103  
office: 206-684-5207  
fax: 206-684-4873  
email: [kelly.helmick@zoo.org](mailto:kelly.helmick@zoo.org)

## Holly Reed

**From:** Kelly Helmick [Kelly.Helmick@Zoo.org]  
**Sent:** Sunday, August 07, 2005 9:43 AM  
**To:** Holly Reed (E-mail)  
**Subject:** elephant preship

1. CBC/serum chemistry - we perform regular bloodwork, all normal for this animal. a repeat sample will be pulled prior to shipment and if WNL, we will just send a copy with the records.
2. Rectal culture for salmonella or other fecal pathogens - we will pull a sample prior to shipment and if WNL, send a copy with the records
3. Fecal exam for ova and parasites - direct and floatation - like blood, performed regularly, we will repeat before shipment and if WNL, will send a copy with the records
4. Trach wash/TB test history - results and date of last test - annual testing in April 05 negative for all 3 trunk washes (see medical records)
5. EMC virus titers - if previously tested negative - what other elephants have been introduced since that test and what is their location history and titer status. - no titers pulled on any of our elephants
6. History for exposure to herpes. - no history that i could find, negative titers July 1999 (see medical records)
7. Medical records - to review historical medical issues and how we can best prepare to receive and take good care of her. - you should have these already.

Kelly E. Helmick, DVM, MS  
Associate Veterinarian  
Woodland Park Zoo  
601 North 59th Street  
Seattle, WA 98103  
office: 206-684-5207  
fax: 206-684-4873  
email: kelly.helmick@zoo.org

22-July-05 • 0.1.0 • Elephant "Bamboo" • ISIS#20073 • Pt. Defiance Zoo, Tacoma WA • August 2005 • ZAT#M-2264 • EAST/Toffic-Upchurch  
 Vet Name/Contact Info: Holly Reed hreed@pdza.org

<i>Preshipment Requests</i>	<i>Date Completed</i>	<i>Results</i>	<i>Comments</i>
HC typed	7/22/05 asgs		
USDA form 7040 to curators	7/22/05 asgs		
Permit required? Obtained?			
State vet contact info	Dr. Kathleen Connell <a href="mailto:kconnell@agr.wa.gov">kconnell@agr.wa.gov</a>		
Visual + weight	8/23	PE WNL; wt=8600 lbs	
CBC/panel/serum bank	8/18	WNL	
Fecal O&P	8/19	negative	
Fecal culture ID	8/19	negative	
TB trunk wash	April 5-7, 2005	negative	
herpes PCR	July 1999	negative	
EMCV exposure	None	none	
medical records to vet	August 8, 2005 (asgs) shipped first class		none
Date ready to ship			WNV negative 2003
HC signed/records completed	23 Aug05		

7/21/05: From Holly Reed: Here are my preshipment requests:

1. CBC/serum chemistry
2. Rectal culture for salmonella or other fecal pathogens
3. Fecal exam for ova and parasites - direct and floatation
4. Trach wash/TB test history - results and date of last test
5. EMC virus titers - if previously tested negative - what other elephants have been introduced since that test and what is their location history and titer status.
6. History for exposure to herpes.
7. Medical records - to review historical medical issues and how we can best prepare to receive and take good care of her.

8/11 - CBC/panel, fecal culture, fecal O&P to be performed within 7-10 days of anticipated ship date. Keeper staff will also get a recent weight. Oral psyllium to be added to diet for 1 week prior to shipment. Oral electrolytes to be offered 12-36 hr prior to shipment in addition to regular water.

**PRESHIPMENT COPY**

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LEPHAS MAXIMUS (no subsp)	Sex: Female	Acc. #: T05M10
Asiatic elephant	Age: 41Y Est.	Birth: 1.Nov.1966
Name: BAMBOO		

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.....2005....

26.Aug.2005

SOAP: Bamboo arrived last night. Unloading was very smooth. Bamboo walked out at a normal pace and calmly. Keepers from WPZ present to make sure she had something familiar in her new home. They will be working with her daily here for at least a week. She went through normal behaviors upon arrival and ate. Will keep her under observation and start fecal exams as soon as keepers can start collecting feces.

WPZ staff started Bamboo on equine dose of psyllium orally and electrolytes in the water prior to her transport. Will continue the psyllium and electrolytes in the water for at least 7 more days. (HHR)

18.Oct.2005

SOAP: Fecal exam #1 negative for O&P and giardia/crypto(IFA) (HHR)

23.Oct.2005

SOAP: Quarantine fecal exam # 2 negative for O&P (HHR)

31.Oct.2005

SOAP: Quarantine fecal #3 is negative for O&P (HHR)

1.Nov.2005

S: Quarantine Exam - visual. Bamboo has continued to appear normal (as confirmed by her WPZ keepers) behaviorally since her arrival. Stools are normal. Appetite is normal. She has interacted verbally and tactily with the other elephants. They are reported to be getting along well. Preshipment reports and testing from Woodland Park Zoo (WPZ) indicate that Bamboo is negative for TB via trunk washes and Rapid Test and MAPIA performed through the study conducted by Dr. Michelle Miller at Disney's ANimal Kingdom. No titers for EMC virus reported for any of the WPZ elephants.

O: Wt = 8600 lb on 23 AUG 05

A: Provisional release from quarantine - bloodwork will be collected when keepers have trained the behavior for our protected contact situation.

P: WPZ reported previous routine tail soaking for chronic follicular abscesses and cracked tail skin. Changed to routine tail soaks in apple cider vinegar and applying moisturizer as needed. Monitor to evaluate. (HHR)

.....2006....

12.Jan.2006

Problem: ABCESS - right hip region (Confirmed)

Printed on: 4.Nov.2007

Clinical Notes - Individual Specimen Report  
POINT DEFIANCE ZOO & AQUARIUM

ELEPHAS MAXIMUS (no subsp)

Asiatic elephant

Name: BAMBOO

Sex: Female

Age: 41Y Est.

Acc. #: T05M10

Birth: 1.Nov.1966

10.Mar.2006

Problem: ABCESS - right hip region (Confirmed); Exam - right hip region

13.Mar.2006

Problem: ABCESS - right hip region (Confirmed); Exam - right hip region

3.Apr.2006

Problem: ABCESS - right hip region (Confirmed)

SO: Keepers still getting pus from right hip abcess. After reviewing the article in AAZV 2005 by Jan Ramer (Indy zoo) about use of honey in treatment of a deep wound in an elephant, their treatment went on for approx 54 days before resolved, but saw continual improvement. We are seeing none here.

A: Discontinue honey treatment and initiate furazone treatment after flushing with dilute chlorhexidine.

P: Treat for two weeks then reevaluate.

Rx: FURAZOLIDONE topically BID for 14 days. (HHR)

18.Apr.2006

Problem: ABCESS - right hip region (Confirmed)

SOA: Preshipment sample collection for Bamboo is as follows:

SUBJECT: SAMPLE COLLECTION SCHEDULE FOR BAMBOO

The following samples will need to be collected for Bamboo's prshipment requirements:

1. Trunk Washes
    - a. Three samples - can be collected on consecutive days
    - b. The samples must be frozen immediately after collection
    - c. Deliver to Julie the day of collection.
    - d. Julie will arrange to send them off all together (just Bamboo's) on dry ice by overnight express to National Veterinary Services Lab.
- Request mycobacterial culture with speciation (using VS form 10-4)
2. Blood has to be taken in the same week that the trunk washes are collected.

TEST	LAVENDER	TIGER
RT/MAPIA		2
EEHV		2
CBC	2	
Chemistry		1
Vit E levels		2
Disney Serum Bank		10

Results recorded on Nat'l Zoo sheet - 19 Apr 06

TOTAL  
2 ml

Clinical Notes - Individual Specimen Report  
POINT DEFIANCE ZOO & AQUARIUM

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ELEPHAS MAXIMUS (no subsp)

Asiatic elephant  
Name: BAMBOO

Sex: Female  
Age: 41Y Est.

Acc. #: T05M1  
Birth: 1.Nov.1966

10.May.2006

Problem: ABCESS - right hip region (Confirmed); Exam - Recheck  
S: Results of Rapid Test and MAPIA taken 25April06 for TB in elephants as performed in the study being conducted by Dr. Miller at Disney Animal Kingdom.  
O: RT negative, MAPIA = negative  
A: Bamboo is negative for TB via RT and MAPIA testing  
P: NOTE: One of the two other elephants that Bamboo is living with has been found reactive on the RT and MAPIA testing by Dr. Miller's study, though negative on annual trunk washes. Further testing is being conducted on banked serum and correlated with that elephant's location history. At this time, the third elephant in the collection is also negative on RT and MAPIA. Further information will be forwarded to Dr Collins at WPZ to that he may evaluate the need for further testing or treatment of Bamboo. To date, though Hanako (neg RT and MAPIA) has been living with Suki (RT and MAPIA reactive) for 9 years she remains negative for TB through RT, MAPIA testing and annual trunk washes. This bodes well for Bamboo who has only lived with Suki for 10 months. Suki has been asymptomatic all 10 years that she has lived at PDZA (HHR)

11.May.2006

S: Results of the #4 fecal exam for preshipment testing  
O: Negative for fecal ova and parasites via direct and flotation  
A: Negative for fecal parasites  
P: Continue preshipment testing (HHR)

12.May.2006

S: Results of the EEHV ELISA. From National Zoo Department of Pathology.  
O: ELISA titers are reported out as low.  
A: Low titer for both Suki and Bamboo  
P: Note from the lab - The EEHV ELISA is in the developmental stage. We are still working on many aspects of the test, including storage conditions for samples; controls to be used, detection systems, and significance of positive/negative titers. We will be using the results over the next six to twelve months to help us determine the optimal ELISA for EEHV. Please keep in mind that your results are part of this developmental process, and may not reflect the elephants' actual EEHV status. Thank you for sending samples for us to use in this endeavor. (HHR)

5.Jun.2006

Fecal submitted for O&P, sedimentation for preshipment. Started on psyllium (equi aid) 8 scoops (provided in bucket) SID for 14 days. (JCL)

Printed on: 4.Nov.2007