Anatomy of the Asian Elephant (*Elephas maximus*) Front Foot: Anatomical Description, Imaging, Interpretation, and Clinical Relevance

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**Introduction**
This annual report spans only three months since the beginning of funding (ML-ISAZA-001). We have conducted seven preliminary MRI scans at the MBI-UF AMRIS facility.

Clinically, front foot disease is highly prevalent in captive elephants, with approximately half of the captive population experiencing foot disease at some point in their lifetime\(^1\). Radiography is the most common tool used to assess the front foot and determine foot health status, developmental anatomy, disease presence, and response to treatment\(^2\). Currently there is limited information on elephant foot anatomy and no standard method for assessing radiographs for clinical evaluations. Although elephants share many anatomical characteristics found in other species, the anatomy of the elephant foot is unique\(^2\). This project will provide us with a better understanding of the relevant anatomy that is essential for radiographic interpretation. This knowledge can be directly applied to other captive elephants to enhance their veterinary care, and to facilitate communication among veterinarians regarding foot disease recognition, disease severity, and treatment options.

**Experimental**
Elephant front feet have been collected from animals that were presented for necropsy. All the collected feet were from female elephants that died of unrelated causes. The cadaver specimens are radiographed and CT scanned in addition to MR imaging. For the MRI scans, the feet are cleaned, thawed, and placed into a sealed plastic bag. The feet are imaged in a 3T Philips Whole Body MRI unit at the Advanced Magnetic Resonance Imaging and Spectroscopy Facility (AMRIS). The MRI images will be analyzed and compared with radiographic images, CT images, and a dissection of each foot. Three dimensional digital reconstructions of both the MRI and CT data will be compiled and compared.

**Results and Discussion**
As this project is just getting started, we are in the data collection phase. DICOM data files from the MRI are being acquired and stored for further analysis. Inserted are examples of a 3D CT reconstruction, a CT slice, and an MRI slice of the same elephant foot.

**Conclusions**
Project is currently in progress with only preliminary images acquired. The anatomy of the Asian Elephant foot is unique.

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**References**