

Date: May 8, 2014

Dr. Joseph Cook
Curator of Mammals
Museum of Southwestern Biology
CERIA Building, MSC03 2020
1 University of New Mexico
Albuquerque, NM USA 87131-0001

Dear Dr. Cook:

I am writing to request specimens for a project undertaken by my graduate student, Lexi Moore. Lexi is studying the biomechanics and morphology of burrowing rodents. The aim of this research is to perform quantitative comparisons of morphometrics from subterranean rodents of the family Geomyidae and from the closely related terrestrial Heteromyidae. These comparisons will permit testing of functional and phylogenetic hypotheses.

In order to quantify morphological characters, microcomputer tomography (microCT) measurements will result in precise 3D reconstructions of animal morphology. Lexi and Dr. Jesse Young will perform these microCT scans using a Scanco vivaCT 75 at the Northeast Ohio Medical University (NEOMED) in Rootstown, Ohio. Lexi will learn microCT and morphometric techniques, and with the aid of specimens from the Museum of Southwestern Biology, will produce a dataset to assess the relationship between phylogeny and morphology in Geomyid and Heteromyid rodents. Beyond these aims, 3D models of skeletal anatomy will be used in conjunction with biplanar, high-speed X-ray video at UNLV to create detailed 3D kinematics of burrowing behavior in both pocket gophers and kangaroo rats.

Sincerely,



Dr. David Lee



Lexi Moore

For all specimens, skulls and unarticulated post-cranial skeletons are requested. 4 females of each species are requested.

Pocket gophers (Geomyidae):

Thomomys bottae

Geomys bursarius

Pappogeomys castanops

Kangaroo rats, kangaroo mice, and pocket mice (Heteromyidae):

Heteromys desmarestianus

Liomys pictus

Dipodomys deserti

Microdipodops pallidus

Perognathus parvus

Chaetodipus penicillatus