



**NORTHERN ARIZONA
UNIVERSITY**

College of Engineering, Forestry & Natural Sciences

**Center for Microbial Genetics & Genomics
Keim Genetics Lab**

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June 6, 2014

Emily Braker
Collection Manager of Vertebrate Zoology
University of Colorado Museum of Natural History

Re: Genetic Material Request for *Cynomys gunnisoni*

Dear Ms. Braker,

The Gunnison's prairie dog (*Cynomys gunnisoni*) is a ground squirrel that inhabits the high desert and mountain grasslands of Arizona, Colorado, New Mexico, and Utah. Currently, well-described epizootics of sylvatic plague regularly occur throughout most of *C. gunnisoni*'s North American range; however, the causative agent of plague, the bacterium *Yersinia pestis*, is not endemic to the New World. *Y. pestis* arrived in the United States via several ports around 1900, and became established shortly thereafter in rodents of the west coast, as part of the third known plague pandemic, which is ongoing.

We would like to take the opportunity afforded by your museum's prestigious collection to study the dynamics of neutral and adaptive genetic diversity of *C. gunnisoni* throughout their historical North American range, both before and after the current plague pandemic. We will do this by sequencing 11 microsatellite loci and a 270 base pair region of the *DRB* locus within the major histocompatibility complex (MHC). Methods for sequencing these loci have been developed and successfully implemented in our laboratory at Northern Arizona University. We currently have these genetic data for 378 individuals from several modern populations, and wish to supplement these data with archived samples encompassing their distribution (440 exist in museums). The University of Colorado's Museum of Natural History's Mammalogy collection has 29 specimens from *C. gunnisoni*'s historical range. We request samples from the following specimens:

Catalog numbers:

328; 8262-8286; 8605; 17197; 17198. (List also attached as an excel file).

Ideally, we would prefer 5x5 mm skin clips off the incision area (down the midline) of specimens. We have successfully extracted genomic DNA from skin clips, and from standard skeletal, kidney, and heart tissues, as well as from skull scrapings, using phenol chloroform extractions optimized for ancient DNA extraction. I will attempt to isolate DNA from any formalin-fixed tissue using the techniques of Weiss *et al.* 2011 and others; please alert me as to whether formalin was used for the preservation of any samples received.

We have contacted 5 other museums (AMNH, DMNS, KU, UMMZ, and USNM) in an effort to obtain 389 additional historical samples to aid in this effort. (AMNH: American Museum of Natural History; DMNS: Denver Museum of Nature & Science; KU: University of Kansas Natural History Museum; UMMZ: University of Michigan Museum of Zoology; USNM: Smithsonian Institution.)

Following this work, all remaining DNA will be returned, and the museum will be acknowledged in all resulting publications. Please feel free to contact me with any questions.

If this application is successful, please contact me for our billing information, as we are able to cover shipping costs. The samples may be sent to:

Dr. Katy J. Califf
The Center for Microbial Genetics and Genomics
Applied Research & Development Building Bldg 56, 3rd Floor 1298 S Knoles Drive
Flagstaff, Arizona 86011-4073

Please send frozen if sample is currently frozen, and alert that sample has been mailed.

Yours sincerely,

A handwritten signature in black ink that reads "Katy Califf". The signature is written in a cursive, flowing style.

Katy J. Califf, Ph. D.
Post-Doctoral Scholar
Center for Microbial Genetics and Genomics
Northern Arizona University
Katy.Califf@nau.edu