Estrus staging via vaginal cytology and behavior in Aye-Ayes (*Daubentonia madagascariensis*)
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Aye-ayes (*Daubentonia madagascariensis*) are listed as endangered by the International Union for Conservation of Nature. There are only 52 captive aye-ayes in the world. Duke Lemur Center is home to the largest population in North America, with fourteen individuals. The very small genetic pool for propagation of captive populations, combined with slow maturation and relatively low fecundity of the aye-ayes makes population management difficult. Consequently, it is vital to develop an understanding of their physiology. The current case describes the correlation of vaginal cytology and physical changes of the external genitalia from a single adult aye-aye that has been trained to allow collection of regular vaginal swabs.

Between February 6, 2015 and April 23 2015, twelve vaginal swabs were obtained successfully with intervals of two to twenty-four days between samples. Seven additional swabs resulted in non-diagnostic, acellular slides. During this time, physical changes of the external genitalia were also observed and graded subjectively on a 0-4 score, in accordance with established policy of the center. Cellular “cornification” gradually increased between February 6th and March 4th, with 99% superficial cells noted between March 4th and March 6th followed by reversal to 0% superficial cells over seven days. On April 22nd, greater than 90% superficial cells were noted again. These findings are consistent with changes typically seen in canids during proestrus, estrus, and diestrus and corresponded with development of vulvar edema with a subjective grade of 1-2 in this animal during periods of “cornification”, compared to a grade of 0 during periods when predominately parabasal cells were noted.

This case is the first to characterize the entire cycle of an aye-aye using both physical and cytological observations. Systematic hormonal assays, combined with cytologic, physical, and behavioral observations are urgently needed to define the normal cycle of aye-ayes.