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Advances in non-invasive hormone monitoring of birds and mammals from southern South America: Development of a technical platform for reproductive and stress research in Argentina

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Topic:

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Abstract:

In continental terms, southern South America is a peninsula. The dominant feature of this portion is the Andes Mountains, which is associated with the Monte, Gran Chaco and Patagonian areas. To understand basic animal reproductive and stress physiology, expertise in tracking gonadal and adrenocortical activities is essential. This presentation describes the approach used by our team to develop a technical platform for reproductive and stress hormone research by applying non-invasive monitoring techniques to explore the biology of several endemic avian and mammalian species. One of our goals was to revise the protocols and the advances of studies conducted in Argentina. From 1998 to date, our staff has received international research training and six Ph.D. studies are being developed by local students. This research endeavor expects to improve our professional skills, to detect steroidal metabolites by specific immunoassays, and establish a collaborative net-work. We are also conducting collaborative experiments investigating reproductive and stress functions of chinchilla (*Chinchilla lanigera*) from the Andes, collared anteater (*Tamandua tetradactyla*) from the Monte, and mara (*Dolichotis patagonum*) from Patagonia. Results of some of these studies suggest a preferential route of steroidal metabolite excretion that varies depending on the rodentia suborder. We are also conducting experiments in Japanese quail (*Coturnix coturnix japonica*), as a laboratory animal model for wild birds, to understand reproductive and adrenocortical activity under different environmental conditions, including measuring the effects of confounding factors (e.g., photoperiod, diet) on fecal steroid metabolites. Results demonstrated that not only diet but also photoperiod affected non-invasive monitoring of avian adrenocortical activity. At present, highly-trained local researchers are able to accurately assess endocrine state of these captive- or zoo-housed animals in conservation programs, based on their normative endocrine data.