

# Christine Drea, Assistant Professor, Biological Anthropology & Anatomy



## Contact Info:

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## Education:

- PhD, Emory University, 1991
- M.A., Emory University, Atlanta, 1990
- B.S., University of Maryland, 1984

## Research Interests: *Mammalian social behavior and reproductive development*

I have two broad research interests, sexual differentiation and social behavior, both focused on hyenas and primates. I am particularly interested in unusual species in which the females display a suite of masculinized characteristics, including male- like or exaggerated external genitalia and social dominance. The study of naturally occurring hormones in such unique mammals can reveal general processes of hormonal activity, expressed in genital morphology, reproductive development, and social behavior. Taking a combined laboratory and field approach allows me to relate captive data to various facets of the animals' natural habitat, thereby enhancing the ecological validity of assay procedures and enriching interpretation in an evolutionary framework. The goal of comparative studies of hyenas and lemurs is to help elucidate the mechanisms of mammalian sexual differentiation.

My research program in social behavior focuses on social learning and group cohesion. Using naturalistic tasks that I present to captive animals in socially relevant contexts, I can investigate how social interaction modulates behavior, problem- solving, and cognitive performance. By studying and comparing models of carnivore and primate foraging, I can better understand how group-living animals modify their actions to meet environmental demands. A primary interest is determining whether similar factors, related to having a complex social organization, influence learning and performance across taxonomic groups. I am also interested in how animals learn rules of social conduct and maintain social cohesion, as evidenced by their patterns of behavioral developmental, the intricate balance between aggression and play, the expression of scent marking, and the social facilitation or inhibition of behavior.

Representative Publications [\(More Publications\)](#)

1. Charpentier, M.J.E., Boulet, M., C., & Drea, C.M.. "Smelling right: The scent of male lemurs advertises genetic quality and relatedness." 2008: 3225-3233. doi:10.1111/j.1365-294X.2008.03831.x [\[abs\]](#)
2. Drea, C.M. & Scordato, E.S.. "Olfactory communication in the ringtailed lemur (*Lemur catta*): Form and function of multimodal signals." *Chemical Signals in Vertebrates*. Ed. J. Hurst, R.J. Beynon, S.C. Roberts, & T. Wyatt Springer Press, New York, 2008: 91-102. [\[abs\]](#)
3. Drea, C.M.. "Sex and seasonal differences in aggression and steroid secretion in *Lemur catta*: Are socially dominant females hormonally 'masculinized'?" 2007: 555-567. doi:10.1016/j.yhbeh.2007.02.006 [\[abs\]](#)
4. Drea, C.M. & Weil, A.. "External genital morphology of the ring-tailed lemur (*Lemur catta*): Females are naturally 'masculinized'." 2008: 451-463. doi:10.1002/jmor.10594 [\[abs\]](#)
5. Scordato, E.S. & Drea, C.M.. "Scents and sensibility: Information content of olfactory signals in the ringtailed lemur (*Lemur catta*)." 2007: 301-314. doi:10.1016/j.anbehav.2006.08.006 [\[abs\]](#)
6. Drea, C.M. & Frank, L.G.. "The social complexity of spotted hyenas." *Animal Social Complexity: Intelligence, Culture, and Individualized Societies*. Ed. F.B.M de Waal & P.L. Tyack Cambridge, MA: Harvard University Press, 2003: 121-148. [\[abs\]](#)
7. Drea, C.M., Place, N.J., Weldele, M.L., Coscia, E.M., Licht, P. & Glickman, S.E.. "Exposure to naturally circulating androgens during foetal life incurs direct reproductive costs in female spotted hyenas, but is prerequisite for male mating." 2002: 1981-1987. doi:10.1098/rspb.2002.2109 [\[abs\]](#)
8. Drea, C.M. & Wallen, K. "Low status monkeys "play dumb" when learning in mixed social groups." *Proceedings of the National Academy of Sciences, USA*1999: 12965-12969. [\[abs\]](#)
9. Drea, C.M., Weldele, M.L., Forger, N.G., Coscia, E.M., Frank, L.G., Licht, P., & Glickman, S.E.. "Androgens and masculinization of genitalia in the spotted hyaena (*Crocuta crocuta*). 2. Effects of prenatal anti-androgens." 1998: 117-127. [\[abs\]](#)
10. Drea, C.M., Hawk, J.E., & Glickman, S.E.. "Aggression decreases as play emerges in infant spotted hyaenas: preparation for joining the clan." 1996: 1323-1336. [\[abs\]](#)