

Ovarian Function and Reproductive Behaviors Across the Female Orangutan Life Cycle

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ABSTRACT

Due to their phylogenetic position as an outgroup to humans and the other African apes, orangutans are an especially valuable comparative tool with which questions about the evolution of human life history and reproductive characteristics can be addressed. Yet few relevant data are available. In this dissertation, I use endocrinological and behavioral data from 7 female and 3 male orangutans housed at the Woodland Park Zoo in Washington and the Great Ape Trust in Iowa to characterize the ovarian function and reproductive behaviors of captive female orangutans at different points in the life cycle. Ovarian hormone measurements were achieved through the use of non-invasive urine sampling, and assays reveal both intra- and inter-individual variation in hormone production. Results indicate that (1) adolescent females in captivity do not experience a marked period of subfecund estrogen and progesterone levels in association with reproductive maturation, (2) individual females exhibit both “high quality” and “low quality” cycles, including instances of anovulation, in the absence of fluctuating dietary and environmental conditions, (3) mating behaviors vary between individuals and with cycle phase, but are not strongly influenced by absolute ovarian hormone concentrations, and (4) reproductive senescence does not significantly impact the ovarian function and mating behaviors of aging female orangutans. These results demonstrate that many aspects of human reproductive biology and behavior, such as an extended period of mating receptivity, are evolutionarily conserved.

They suggest, however, that the decline in human ovarian function in mid-life may be derived and of possible adaptive significance. The potential significance of differences between captive and wild ape populations, and the character, history, and familial relationships of the particular individuals discussed are considered in the interpretation of all data.