

POSTER 106

METABOLIC RHYTHMS IN HAPLORHINE AND STREPSIRRHINE PRIMATES

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Microstructural evidence from teeth and bone has recently been used to support the hypothesis that growth, metabolism, and reproduction – i.e., life history – are centrally regulated by a neuroendocrine rhythm known as the Havers-Halberg Oscillation (HHO). Many questions about HHO biology and its relationship to life history evolution remain. For example, studies have shown that body mass is a strong predictor of HHO for anthropoid primates, but it cannot explain the unusual HHO patterns of strepsirrhine primates. It is uncertain whether this results from phylogenetic differences in HHO regulation across major primate clades, or whether such differences are eliminated by application of more physiologically relevant predictor variables.

This study examines Retzius line periodicity (a proxy for HHO) gathered from histological sections of haplorhine and strepsirrhine teeth to provide insight into this question. Results for regressions of Retzius periodicity against body mass, brain mass, encephalization, and basal metabolic rate (BMR) show that for all primates, brain mass and BMR are the best predictor variables. However, strepsirrhines still differ in these two relationships with respect to haplorhines. This suggests that while brain mass and BMR are more physiologically appropriate variables for assessing patterns in HHO variation, phylogeny may still play a major role in governing how HHOs of specific taxa respond to ecological forces. Results also suggest that relatively longer HHOs seen in larger-brained subfossil lemurs correspond with their relatively “slower” life history schedules, reinforcing the idea that HHO can influence the evolution of life history in response to specific ecological selection regimes.