**Title**:

Encephalization: An evolutionary response unique to humans?

**Abstract**:

Hominin encephalization and its implications in the evolution of complex cognitive capabilities has long been a central focus of human origins research. Specifically, rapid brain expansion relative to body size appears to have begun with the advent of the genus *Homo*, eventually giving rise to modern humans with brains three times larger than expected for a primate of our body size.1 Of the many hypotheses positing different key forces driving this evolutionary trend, very few have attempted to test them in taxa outside of the hominin clade.2 My proposed project will first investigate whether encephalization occurs in African fossil ungulates/carnivores in a manner similar to the pattern and timing of hominin encephalization. The second objective of this project is to test for correlations between fossil ungulate/carnivore encephalization and broad changes in climate (i.e. temperature variability and aridity) that some have proposed were a prime selective pressure for increased encephalization rates in the hominin clade.3 The results of this study will help elucidate whether large-scale environmental changes only played a role in hominin encephalization, or whether other taxa were similarly affected. All raw data will be collected from previous publications.4,5

**References**:

1Sherwood, Chet C., Francys Subiaul, and Tadeusz W. Zawidzki. "A natural history of the human mind: tracing evolutionary changes in brain and cognition."*Journal of Anatomy* 212.4 (2008): 426-454.

2Elton, Sarah, Laura C. Bishop, and Bernard Wood. "Comparative context of Plio-Pleistocene hominin brain evolution." *Journal of Human Evolution* 41.1 (2001): 1-27.

3Potts, Richard. "Variability selection in hominid evolution." *Evolutionary Anthropology: Issues, News, and Reviews* 7.3 (1998): 81-96.

4Radinsky, Leonard. "Evolution of brain size in carnivores and ungulates."*American Naturalist* (1978): 815-831.

5Finarelli, John A. "Estimating endocranial volume from the outside of the skull in Artiodactyla." *Journal of Mammalogy* 92.1 (2011): 200-212.