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**Jordan Michael Culp\*** (jculp@math.wsu.edu), Department of Mathematics and Statistics, Washington State University, PO Box 643113, Pullman, WA 99164. *A simple ODE model relating BDNF content and circadian rhythms.* Preliminary report.

The suprachiasmatic nucleus (SCN) of the hypothalamus serves as the master clock and coordinator of circadian rhythms in many living creatures. The 20,000 neurons in the SCN are entrained to the day-night light cycle by retinal ganglion cells that project directly to the SCN along the retinohypothalamic tract (RHT). Evidence suggests that brain-derived neurotrophic factor (BDNF) and its receptor tropomyosin-related kinase B (TrkB) are implicated in the gating of photic input to the SCN along the RHT. Adapting a positive-feedback model for circadian rhythms based on the dimerization and proteolysis of PER and TIM in *Drosophila melanogaster*, I aim to reproduce the results of BDNF and TrkB mediated signalling on the circadian oscillator. (Received September 17, 2019)