1145-92-1924 **Sergiy Koshkin** and **Isaiah G. Meyers*** (isaiah.meyers@utexas.edu), 1300 Crossing Place, APT 3631A, Austin, TX 78741, Austin, TX 78741. *A Harmonic Oscillator Analogy to Mathematical Biology Systems.* Preliminary report.

We give a novel presentation of a number of models in virus dynamics, epidemiology and plant biology as damped versions of the Lotka-Volterra predator-prey model. The analogy with the classical harmonic oscillators is drawn based on the use of Lyapunov functions, which allows for rich characterizations of these models. We consider applications to a model of virus dynamics, and a simplified model of plant growth. In the former, Lyapunov functions allow us to prove stability and provide a general method for bounding trajectories of the system. In the latter case, we are able to characterize the final length of the plant by using trapping regions produced by a family of Lyapunov functions. (Received September 24, 2018)