1135-00-2081 **Yena Kim*** (rednblue1004@ufl.edu), Department of Mathematics, 1400 stadium rd., University of Florida, gainesville, FL 32611, and **Maia Martcheva** (maia@ufl.edu), Department of Mathematics, 1400 Stadium rd., University of Florida, gainesville, FL 32611. *One the principle of host evolution in immuno-epidemiological models.*

Over the last 20 or so years, scientists have been interested in linking within host and between host models of infectious diseases, thus studying these diseases on multiple scales. Here, we are using the so called nested approach introduced first by Gilchrist and Sasaki. The main question that Gilchrist and Sasaki addressed was the co-evolution of the pathogen and the host. Because of the simplicity of their model, they used for the evolution of the host the maximization of the life span of the infected individuals. Using a simple SI model, Pugliese confirmed analytically the above principle host evolution in nested immuno-epidemiological models. In this talk, we argue for the first time that the host evolves not to maximize its life span in the infectious class but to minimize the case fatality proportion that is the number of death of all cases. The principle of minimization of case fatality proportion is equivalent to the principle of maximization of host life span in the infectious class for diseases without recovery, that is diseases of SI type. However, if the host have the option to recover, it does not make sense to maximize its life span in the infectious class. In this case, only the principle of minimization of case fatality proportion is valid. (Received September 25, 2017)