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**Michael Barfield** and **Maia Martcheva\***, Department of Mathematics, University of Florida, Gainesville, FL 32611, and **Necibe Tuncer**, **Robert Holt** and **Yena Kim**. *An Immuno-Eco-Epidemiological Model of Competition*. Preliminary report.

We introduce a novel immuno-eco-epidemiological model where two species compete through interference. Furthermore, one of the species is affected by a pathogen and the competition from the other species diminishes the ability of the first species to mount effective immune response. The infected species is structured by its immune response which is general enough to capture chronic infection, recovery with permanent immunity and recovery with temporary immunity. This is coupled with appropriate between-host model with the same ability. The complete immuno-eco-epidemiological model is of nested type with bidirectional coupling. The system has seven types of equilibria whose existence and stability is governed by the several threshold conditions. We also investigate an ODE version of the chronic model obtained from the assumption that the within-host system equilibrates much faster than the between-host system. We find that the impact of species two on the immune response of species one destabilizes the dynamics and oscillations are possible. (Received September 11, 2016)