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Souvik Bhattacharya* (souvik.bhattacharya@unitn.it), Via sale No 105, Povo, Trento, Italy, and **Maia Martcheva** and **Xue-Zhi Li**. *A predator-prey-disease model with immune response in infected-prey.*

In this paper, a predator-prey-disease model with immune response in the infected prey is formulated. The basic reproduction number of the within-host model is defined and it is found that there are three equilibria: extinction equilibrium, infection-free equilibrium and infection-persistent equilibrium. The stabilities of these equilibria are completely determined by the reproduction number of the within-host model. Furthermore, we define a basic reproduction number of the between-host model and two predator invasion numbers: predator invasion number in the absence of disease and predator invasion number in the presence of disease. We have predator and infection-free equilibrium, infection-free equilibrium, predator-free equilibrium and a coexistence equilibrium. We determine the local stabilities of these equilibria with conditions on the reproduction and invasion reproduction numbers. Finally, we show that the predator-free equilibrium is globally stable. (Received June 10, 2014)