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Modelling effective transmission strategies and control of the world's most successful parasite.

Toxoplasma gondii is a protozoan responsible for the disease Toxoplasmosis. The parasite is prevalent worldwide and infects all warm-blooded vertebrates, with cats serving as the only definitive host. Transmission occurs via ingestion of tissue cysts in meats, exposure to oocysts shed in the environment by infected cats, and by vertical transmission to offspring. In this work, a system of differential equations are used to model the complete life cycle of *T. gondii*. Analysis is performed to investigate the significance of each transmission route and the effect of controlling harvest and vaccination on the spread of infection. (Received September 21, 2011)