Sustained nearly regular oscillations in prevalence of infectious diseases such as measles, chickenpox, and flu in large populations have been a subject of puzzlement for many years. Also curious is that stochastic simulations of an SIR (susceptible-infectious-removed) model may show sustained oscillations, whereas the oscillations of the corresponding deterministic model are damped. In this talk we use a multiscale argument to show that the stochastic SIR path, in some parameter range, is close in law to a randomly modulated periodic function whose frequency is determined by the dynamics of the corresponding deterministic SIR. (Received September 20, 2005)