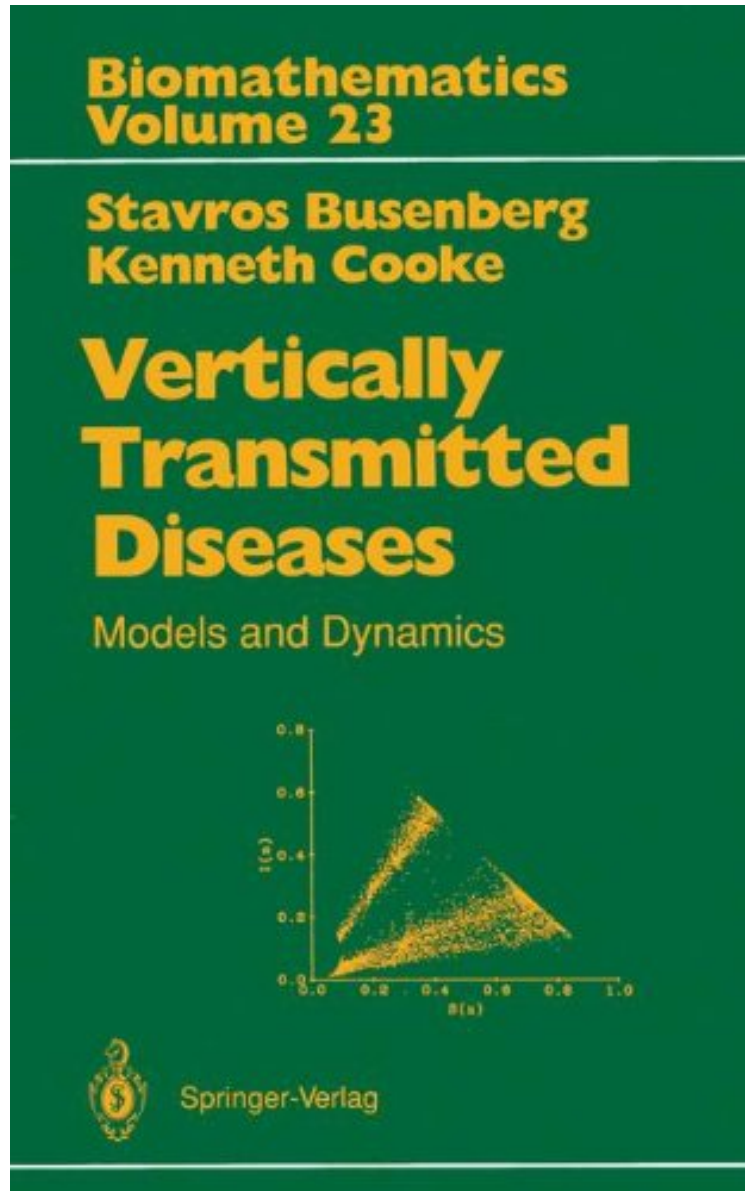


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Vertically Transmitted Diseases: Models and Dynamics (Biomathematics)

Stavros Busenberg, Kenneth Cooke

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Diseases: Models and Dynamics (Biomathematics):

Infectious diseases are transmitted through various different mechanisms including person to person interactions, by insect vectors and viavertical transmission from a parent to an unborn offspring. The population dynamics of such disease transmission can be very complicated and the development of rational strategies for controlling and preventing the spread of these diseases requires careful modeling and analysis. The book describes current methods for formulating models and analyzing the dynamics of the propagation of diseases which include vertical transmission as one of the mechanisms for their spread. Generic models that describe broad classes of diseases as well as models that are tailored to the dynamics of a specific infection are formulated and analyzed. The effects of incubation periods, maturation delays, and age-structure, interactions between disease transmission and demographic changes, population crowding, spatial spread, chaotic dynamic behavior, seasonal periodicities and discrete time interval events are studied within the context of specific disease transmission models. No previous background in disease transmission modeling and analysis is assumed and the required biological concepts and mathematical methods are gradually introduced within the context of specific disease transmission models. Graphs are widely used to illustrate and explain the modeling assumptions and results. REMARKS: NOTE: the authors have supplied variants on the promotion text that are more suitable for promotion in different fields (by virtue of different emphasis in the content). They are not enclosed, but in the mathematics editorial.