

HOW METABOLIC EVENTS MAY INFLUENCE THE PATHOGENESIS OF A VIRUS INFECTION

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Few viruses have properties that permit them to inflict lethal effects or even cause overt clinical disease in all of the hosts they infect. Instead, a broad range of consequences is the usual pattern of events observed. These depend on variables in both the virus and the host. A variable which has received limited study is the influence of host metabolism. We shall show that inhibiting glucose utilization during infection with herpes simplex virus (HSV) has dramatic effects on viral pathogenesis. Inhibition at the time when herpetic lesions occur in the infected cornea results in decreased disease for reasons explained by the differential effects on T cells involved in inflammation. However, inhibiting glucose metabolism from the onset of infection resulted in a syndrome that models human herpes encephalitis with the majority of animals succumbing to lethal encephalitis. This outcome will be explained by the effects of glucose deprivation on innate immunity at the infection site and adaptive CD8 T cell mediated immune changes in the local nerve ganglion. Together these effects result in more viral replication and a failure to maintain viral latency. We shall also describe the effects of manipulating fatty acid metabolism on the stability of herpesvirus latency in the peripheral nervous system. Our results will be discussed in terms of the relevance of metabolic changes that can influence the outcome of other viral infections.

Biography

Barry T. Rouse graduated with a veterinary degree from Bristol, England in 1965. After a brief stint as a practitioner, he undertook graduate studies in Canada obtaining MSc and PhD degrees. He then had a two year postdoctoral experience at the Walter and Eliza Hall Institute of medical research, Melbourne Australia, prior to returning to Canada as an Assistant professor where he established his independent laboratory. In 1977 he moved to Tennessee where he is currently the Lindsay Young Distinguished Professor. Doctor Rouse considers himself a viral immunologist and has written >400 articles with citations of >22000 and a H index of 81. He has trained almost 80 trainees and stays in touch with the majority of them. Thanks to his trainees he has won numerous awards for his research accomplishments.

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