

Research Interests --- KSHV

The second human virus which is being studied in the laboratory is the KSHV. This virus has been linked to HIV and Kaposi's sarcoma but its route of transmission and whether infection by this virus can directly cause KS are not known. Dr. Wood's laboratory has found that the infection rate is extremely high in Zambia. The ongoing study involves the recruitment and follow-up of mother/infant pairs to determine (1) the seroprevalence for HIV and KSHV, (2) whether KSHV DNA can be found in infants' blood, (3) to determine the source of vertical and/or horizontal transmission, and (4) to determine the effect of anti-retroviral in blocking KSHV transmission.

One of the laboratory's findings is that HIV infects 30% of Zambia's normal female population and 40% are infected by KSHV. Therefore, the implications for disease development and transmission of both HIV and KSHV to babies are enormous. Given this high incidence of infection, the Wood lab has been studying whether KSHV can be transmitted from mothers to their newborns, and found that early childhood infection by KSHV is very prevalent, it reached adult level by five years of age, and HIV is a co-factor for transmission. Our results also suggest that both vertical and horizontal transmission is possible. The route of transmission is likely to be through saliva and not via breast milk. These findings now enable us to develop strategies for behavioral intervention to prevent KSHV infection in endemic region like sub-Saharan Africa. The risks factors and the source of KSHV that are associated with transmission are currently being determined. Whether infected children will develop KS, and what other co-factors involved in KS are also being investigated.

Another focus of the Wood laboratory is the control of KSHV replication at the molecular level. KSHV characteristically establishes latent infections in target cells where viral gene expression is highly limited and tightly controlled. The virus can then periodically reactivate to go through lytic replication. Although latent infection may play a role in sustained viral infection and tumorigenesis, lytic reactivation has been implicated to be important for KS development. Therefore, the understanding of how the virus maintains latency and of the viral genes involved is of significance. The laboratory has been studying a viral gene called "Regulator of Transcription Activation" (RTA), which is the central gene involved in the switch from latent to lytic replication. The laboratory has identified a cellular factor that interacts with RTA and enhances its transactivation function, and is actively deciphering the molecular mechanism involved in their interaction and transactivation of viral gene transcription. This study will lead to the development of strategies in preventing the virus from going through lytic replication and KS development.