

## **Viruses and Cancer**

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Approximately 20% of the human global cancer burden is caused by infectious agents and the majority of these are commonly occurring viruses. Perhaps the best known are the papilloma viruses that are associated with cancer of the cervix in women, but liver cancer, certain other carcinomas and sarcomas as well as several types of leukemia and lymphoma, are also caused by different types of virus. We are gaining an increasing understanding of how oncogenic viruses cause malignant disease and this knowledge has provided important insights into the molecular biology of cancer in general. Cancer can be considered to be a relatively rare “side effect” of human tumor virus infection; there are multifactorial aspects of viral oncogenesis although the virus plays an essential role. The prevalence of the tumor virus and of the other co-factors help to explain why viral cancer rates vary in different parts of the world and even within different regions in Italy. Viral cancers occur more commonly in recipients of organ transplants and patients with AIDS so the immune system normally helps to suppress the development of viral tumors. The development of vaccines against hepatitis B virus and more recently papilloma viruses are effective in preventing infection and will therefore reduce the number of viral cancers in future years.