dependent kinases (CDKs) control the progression of a cell through its growth cycle. CDKs are regulated through a series of site-specific complex mechanisms, and the components of such mechanisms include activating cyclins and endogenous CDK inhibitors. Processes of such mechanisms involve regulatory phosphorylation. There are natural products such as butyrolactone and staurosporine that are currently known to be able to provide such activity. These compounds and others generated from their platform are adenosine 5′-triphosphate (ATP) site-directed inhibitors and directly antagonize the activity of CDKs. Further research should more fully elucidate the most efficacious endpoint of CDK inhibition and lead to the control of neoplastic growth and possibly even bring about cytostasis or apoptosis.

The introduction of active agents derived from natural sources into the anticancer weaponry has already significantly changed the futures of many individuals afflicted with cancer of many different types. Continued research into natural sources will continue to deliver newer and more promising chemicals and chemical classes of anticancer agents with novel mechanisms of action that will improve survival rates to even higher degrees.

Human immunodeficiency virus infection is a devastating, globally widespread disease that consumes significant health-care dollars in the due course of management of patients [79]. Most of the currently useful anti-HIV agents are nucleosides and are limited in use due to severe toxicity and emerging drug resistance. Natural products, with their broad chemical structural diversity, provide an excellent opportunity to deliver significant therapeutic advances in the treatment of HIV [167]. Many natural products with novel structures have been identified as having anti-HIV activities [79, 167]. Betulinic acid, a triterpenoid isolated from *Syzigium claviflorum*, has been found to contain anti-HIV activity in lymphocytes. The quassinoside glycoside isolated from *Allanthus altissima* has been found to inhibit HIV replication. Artemisinin, isolated from *Artemisia anuua*, is a sesquiterpene lactone that is of special interest because of its novel structure, potent antimalarial activity, and activity against *Pneumocystis carinii*. A novel phorbol ester isolated from *Excoecaria agallocba* has been reported to be a potent inhibitor of HIV-1 reverse transcriptase. Indeed, most of the natural product chemicals that are attracting interest in this area of research are secondary metabolites such as terpenes, phenolics, peptides, alkaloids, and carbohydrates and are also inhibitors of HIV reverse transcriptase. Other target opportunities in the life cycle of the human immunodeficiency virus available for exploitation are: (1) attachment of virus to cell surface, (2) penetration and fusion of the virus with the cell membrane, (3) reverse transcription via reverse transcriptase, (4) integration into the host genome, (5) synthesis of viral proteins including zinc fingers, and (6) processing of viral polypeptide with HIV protease and assembly of viral proteins and DNA into a viral particle, maturation, and extrusion of the mature virus [167].

Infectious viral diseases remain a worldwide problem. Viruses have been resistant to therapy or treatment longer than most other forms of life because