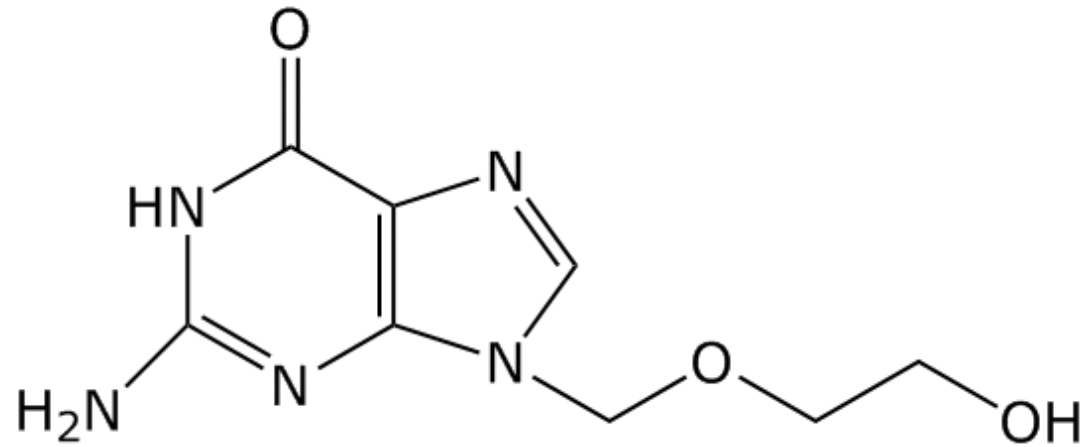
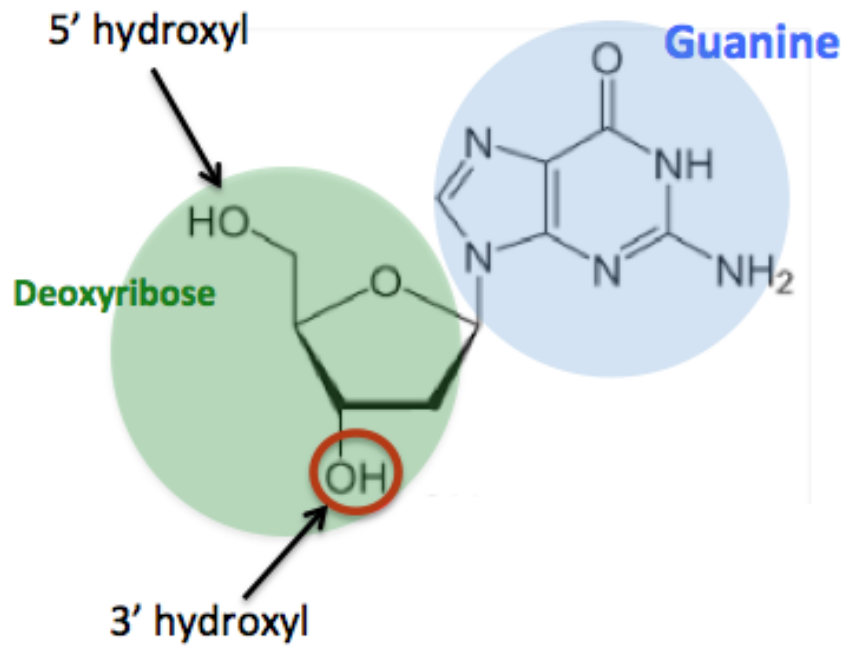




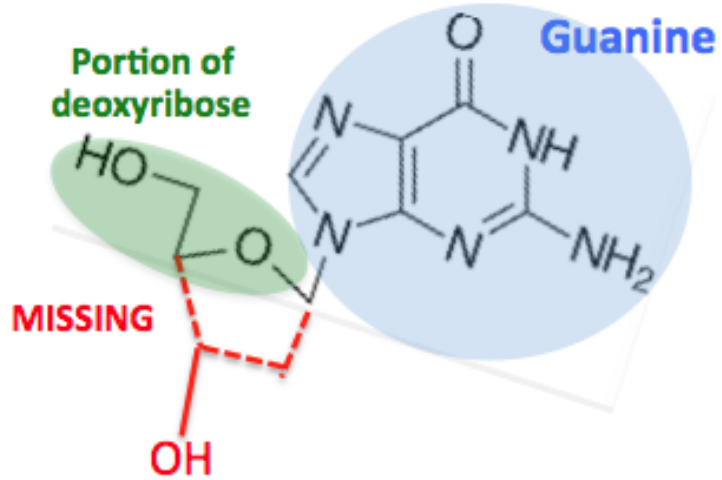
The antiviral drug Acyclovir (structure pictured below) is used to treat infections caused by double-stranded DNA viruses such as herpes simplex virus. Acyclovir acts at the level of DNA synthesis.



- A. Acyclovir functions as the analog of what deoxynucleoside?
- B. Acyclovir cannot be incorporated into the DNA unless it is modified by a virally encoded kinase. Explain why the activity of a kinase is required for Acyclovir to be incorporated during DNA synthesis.



Natural substrate



Acyclovir

- A. Deoxyguanosine.
- B. Without the triphosphate group, Acyclovir cannot incorporate into a growing strand of DNA. Kinases phosphorylate their substrate. The kinase adds the phosphate groups that Acyclovir is missing.

