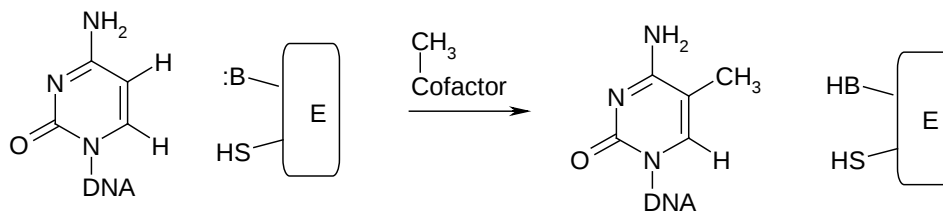


Cofactors: Additional Practice problems:

Textbook 24(2,31)

- 1) Perform literature search about the mechanism of glucose oxidase (1.1.3.4).
Draw a detailed catalytic mechanism for this enzyme.
- 2) Many, but not all, $\text{NAD}^+/\text{NADP}^+$ -dependent enzymes catalyze interconversion between alcohols and carbonyl compounds. Using the on-line database BRENDA, look up the following reactions and determine what classes of compounds do the substrates and products belong to.
 - a. Example: Alcohol dehydrogenase (1.1.1.1) : alcohol / aldehyde
 - b. Zeatin reductase (1.3.1.69):
 - c. Valine dehydrogenase (1.4.1.8):
 - d. Lysine 6-monooxygenase (1.14.13.59):
 - e. Flavone reductase (1.3.1.45)
- 3) Using the on-line database BRENDA, look up the reaction catalyzed by alkene monooxygenase (1.14.13.69). What reaction does this enzyme catalyze? What cofactors does this enzyme contain?
- 4) Using the on-line database BRENDA, look up the reaction catalyzed by mandelate 4-monooxygenase (1.14.16.6). What reaction does this enzyme catalyze? What cofactor does this enzyme contain? Propose a plausible mechanism for this reaction.
- 5) DNA methyltransferases (e.g. 2.1.1.37) are enzymes that modify certain nucleobases in the DNA soon after DNA synthesis. Such DNA methylation is thought to regulate development of young organisms by turning certain genes off. Consider an enzyme that catalyzes the following DNA methylation reaction:



Propose one approach to inhibit this enzyme