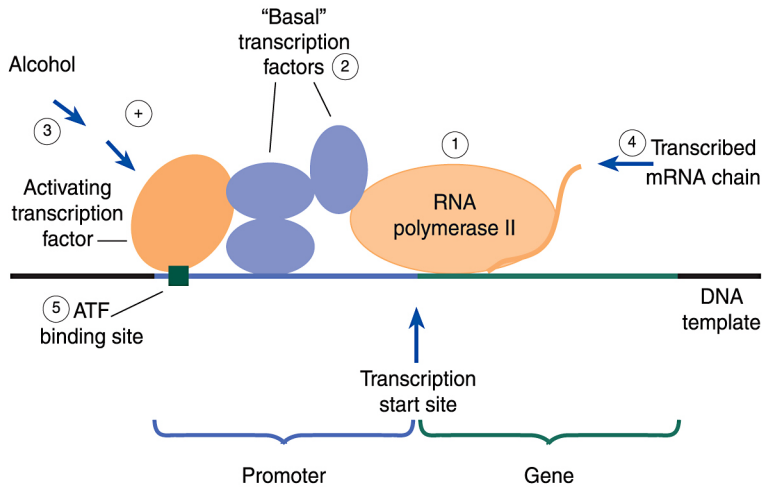
Regulation of gene expression through promoters and transcription factors



Adjacent to genes are promoters, DNA regions that control how much RNA is transcribed from that gene. (1) The enzyme RNA polymerase II initiates transcription at a specific site in the promoter. (2) Certain 'basal' transcription factors control the binding of RNA polymerase to this site. Other proteins that bind to specific short DNA stretches in the promoter and basal factors work together to activate or inhibit transcription. Drugs such as alcohol may modify the activity of those factors. (3) Here, alcohol is arbitrarily assumed to increase the activity of an activating transcription factor (ATF), resulting in (4) increased RNA synthesis from the alcohol-responsive gene. (5) Genes lacking this particular ATF binding site would not respond to alcohol.

Source: Miles, M.F. Alcohol's effects on gene expression. *Alcohol Health & Research World* 19(3): 237–243, 1995.

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