

P040 Direct activation of the Brf1 subunit of TFIIIB by protein kinase CK2

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CK2 is a highly conserved protein kinase with oncogenic properties. It has been shown to stimulate transcription of tRNA genes by RNA polymerase (pol) III both in yeast and mammals. Mammalian CK2 binds and phosphorylates Brf1, an essential subunit of TFIIIB that recruits pol III to its genetic templates. We show that CK2 phosphorylates human Brf1 at serine 450 *in vitro* and *in vivo*. Brf1 is brought to target genes through interaction with the promoter-binding factor TFIIIC. Mutation of serine 450 to alanine compromises the ability of Brf1 to bind to TFIIIC, associate with promoters and activate pol III transcription in transfected fibroblasts. We conclude that CK2 is required for efficient recruitment of Brf1 to pol III-transcribed genes in mammalian cells.