The structural basis for the oriented assembly of a TBP/TFB/promoter complex

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Recently, the definition of the metazoan RNA polymerase II and archaeal core promoters has been expanded to include a region immediately upstream of the TATA box called the B-recognition element (BRE), so named because eukaryal transcription factor TFIIB and its archaeal orthologue TFB interact with the element in a sequence-specific manner. Here we present the 2.4-Å crystal structure of archaeal TBP and the C-terminal core of TFB (TFBc) in a complex with an extended TATA-box-containing promoter that provides a detailed picture of the stereospecific interactions between the BRE and a helix-turn-helix motif in the C-terminal cyclin repeat of TFBc. This interaction is important in determining the level of basal transcription and explicitly defines the direction of transcription.