

P055 Transcription from the *Xenopus gata2* promoter is dependent on both a CCAAT box sequence and an A-form DNA structure

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The critical region of the *Xgata2* promoter contains an inverted CCAAT box and adopts a partial A-form DNA structure *in vitro*. This sequence binds the double stranded RNA binding domains (dsRBDs) of the *Xgata2* transcription factor subunit xilf3 *in vitro*. Active dsRBDs are also required for binding of the whole xilf3 containing complex, CBTF, to the *Xgata2* promoter and for *Xgata2* transcriptional activity *in vivo*. Here we show that base substitutions that increase predicted B-form propensity in this region of the *Xgata2* promoter down-regulates both transcription factor binding and transcription in *Xenopus* embryos, as does mutation of the critical CCAAT box. In contrast, mutations that increase A-form propensity increase both transcription factor binding and activity of a reporter gene. We also show the requirement for the CCAAT box is independent of the degree of A-form character in this region. We suggest a two-component model, composed of both sequence specific and structure specific read-outs, for the interaction of CBTF with the *Xgata2* promoter. This mechanism provides a novel role for an A-form DNA structure in transcriptional activity.