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**RESEARCH PAPERS****Activator-dependent regulation of transcriptional pausing on nucleosomal templates****SA Brown, AN Imbalzano and RE Kingston**

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Promoter-proximal pausing during transcriptional elongation is an important way of regulating many diverse genes, including human *c-myc* and *c-fos*, some HIV genes, and the *Drosophila* heat shock loci. To characterize the mechanisms that regulate pausing, we have established an *in vitro* system using the human *hsp70* gene. We demonstrate that nucleosome formation increases by >100-fold the duration of a transcriptional pause on the human *hsp70* gene *in vitro* at the same location as pausing is observed *in vivo*. Readthrough of this pause is increased by an activator that contains the human heat shock factor 1 (HSF1) transcriptional activation domains. Maximal effect of the activator requires that the system be supplemented with fractions that have hSWI/SNF activity, which has been shown previously to alter nucleosome structure. No significant readthrough is observed in the absence of activator, and neither the activator nor the hSWI/SNF fraction affected elongation on naked DNA; therefore, these results suggest that an activator can cause increased readthrough of promoter-proximal pausing by decreasing the inhibitory effect of nucleosomes on transcriptional elongation.