Supporting Information

Brown and Boeger 10.1073/pnas.1417527111

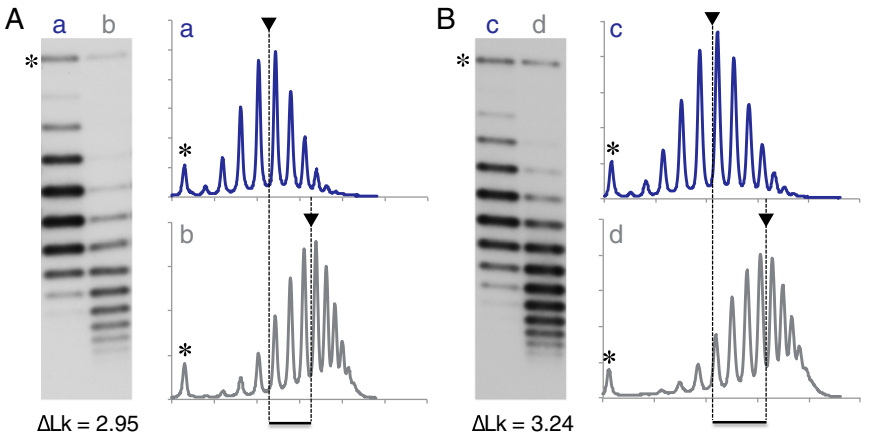

Fig. S1. Topoisomer distributions of gene rings. (*A*) Topoisomer distributions of double-promoter *PHO5* gene rings isolated from (*a*) yM192.1[pSH17] or (*b*) yM193.4[pSH17] cells; cells were grown in Erlenmeyer flasks with constant shaking. Topoisomers were prepared, separated by agarose gel electrophoresis, blotted, and hybridized with a radiolabeled *PHO5* probe as previously described (1). The blot's autoradiography is shown in *Left*; graphs in *Right* are intensity scans across the respective lane of the gel. A black triangle indicates the distribution center (1). The distance between the distribution centers (black horizontal bar; i.e., the linking difference) of rings isolated from (*b*) induced and (*a*) noninduced cells falls short of the difference expected from measurements with single-promoter rings (*viz*., $2 \times 1.85 = 3.7$) (1, 2), suggesting competition between the two promoter copies because of close proximity on the ring. (*B*) Topoisomer distributions of double-promoter *PHO5* gene rings isolated from (*c*) yM183.1[pSH17] or (*d*) yM184.26[pSH17] cells; rings bore an ~500-bp fragment from the ORF of *HMG2* between the two promoter copies. The increased separation between both copies resulted in an increase in linking difference between (*d*) induced and (*c*) noninduced rings, which was predicted by the hypothesis of competition by proximity. Indicated linking differences (ΔLk) are averages from (*A*) three or (*B*) four independent experiments. *Positions of the nicked rings.

1. Boeger H, Griesenbeck J, Strattan JS, Kornberg RD (2003) Nucleosomes unfold completely at a transcriptionally active promoter. *Mol Cell* 11(6):1587–1598.
2. Mao C, et al. (2010) Quantitative analysis of the transcription control mechanism. *Mol Syst Biol* 6:431.