CTCF: making the right connections

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Abstract

CCCTC-binding factor (CTCF), an eleven zinc finger protein initially described as a negative regulator of *myc* expression, and cohesin are known to tether distal regions of chromatin, thus forming chromatin loops. This looping mechanism requires a convergent orientation of the two CTCF motifs. Sanborn et al. proposed a "extrusion model" to explain a wide range of experimental observations and demonstrated that the extrusion model accurately predicted in silico the 3D maps using only the location of CTCF-binding sites. The authors discussed the studies about a chromatin loop forming protein, CTCF, published during the last 2 years.

References:

Ghirlando R, & Felsenfeld G. "CTCF: making the right connections." *Genes Dev.* 2016 Apr 15;30(8):881-91.

Sanborn AL, et al. "Chromatin extrusion explains key features of loop and domain formation in wild-type and engineered genomes." *Proc Natl Acad Sci U S A.* 2015 Nov 24;112(47):E6456-65.

Vietri Rudan M, et al. "Comparative Hi-C reveals that CTCF underlies evolution of chromosomal domain architecture." *Cell Rep.* 2015 Mar 3;10(8):1297-309.

Nakahashi H, Kwon KR, Resch W, Vian L, Dose M, Stavreva D, Hakim O, Pruett N, Nelson S, et al. "A genome-wide map of CTCF multivalency redefines the CTCF code." *Cell Rep.* 2013 May 30;3(5):1678-89.