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Title:	CTCF-Mediated Genome Architecture Regulates the Dosage of Mitotically Stable Mono-allelic Expression of Autosomal Genes
Authors:	Chawla, B. (/jspui/browse?type=author&value=Chawla%2C+B.) Ramachandran, Rajesh (/jspui/browse?type=author&value=Ramachandran%2C+Rajesh) Sandhu, K.S. (/jspui/browse?type=author&value=Sandhu%2C+K.S.)
Keywords:	ChIA-PET chromatin insulation chromatin loops CTCF CTCF-depletion epigenetic regulation
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Abstract:	The mechanisms that guide the clonally stable random mono-allelic expression of autosomal genes remain enigmatic. We show that (1) mono-allelically expressed (MAE) genes are assorted and insulated from bi-allelically expressed (BAE) genes through CTCF-mediated chromatin loops; (2) the cell-type-specific dynamics of mono-allelic expression coincides with the gain and loss of chromatin insulator sites; (3) dosage of MAE genes is more sensitive to the loss of chromatin insulation than that of BAE genes; and (4) inactive alleles of MAE genes are significantly more insulated than active alleles and are de-repressed upon CTCF depletion. This alludes to a topology wherein the inactive alleles of MAE genes are insulated from the spatial interference of transcriptional states from the neighboring bi-allelic domains via CTCF-mediated loops. We propose that CTCF functions as a typical insulator on inactive alleles, but facilitates transcription through enhancer-linking on active allele of MAE genes, indicating widespread allele-specific regulatory roles of CTCF
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