Finding distal regulatory elements in the human genome.

Journal: Curr Opin Genet Dev
Publication Year: 2009
Authors: Nathaniel D Heintzman, Bing Ren
PubMed link: 19854636
Funding Grants: Mapping the transcriptional regulatory elements in the genome of hESC

Public Summary:
Transcriptional regulation of human genes depends not only on promoters and nearby cis-regulatory elements, but also on distal regulatory elements such as enhancers, insulators, locus control regions, and silencing elements, which are often located far away from the genes they control. Our knowledge of human distal regulatory elements is very limited, but the last several years have seen rapid progress in the development of strategies to identify these long-range regulatory sequences throughout the human genome. Here, we review these advances, focusing on two important classes of distal regulatory sequences-enhancers and insulators.

Scientific Abstract:
Transcriptional regulation of human genes depends not only on promoters and nearby cis-regulatory elements, but also on distal regulatory elements such as enhancers, insulators, locus control regions, and silencing elements, which are often located far away from the genes they control. Our knowledge of human distal regulatory elements is very limited, but the last several years have seen rapid progress in the development of strategies to identify these long-range regulatory sequences throughout the human genome. Here, we review these advances, focusing on two important classes of distal regulatory sequences-enhancers and insulators.