

Acting locally and globally: Myc's ever-expanding roles on chromatin.

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Public Summary:

Scientific Abstract:

Myc regulates key cellular processes including cell cycle, differentiation, and apoptosis. It has long been thought to direct these functions by acting solely as a classic transcription factor regulating expression of a small number of key target genes through discrete chromatin events in their promoters. A recent wave of genomics studies together directly challenge the narrowness of this model. For example, Myc binds to tens of thousands of sites in the human genome. It also regulates histone acetylation at and transcription of a remarkable number of genes, far beyond that expected of a classical transcription factor. The influence of Myc on chromatin also surprisingly extends to both genic and expansive intergenic regions. These studies support an evolving model in which Myc activity on chromatin is far more complex than previously imagined. The ability of Myc to act both locally and globally on chromatin may be responsible for its wide-ranging effects on the biology of stem and tumor cells.

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