FOXA1 and GATA3 bind to CCND1 promoter

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Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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Literature references


Reactome database release: 83

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Estrogen induces cellular proliferation by upregulating expression of critical cell cycle regulators that govern progression through G1, such as Myc and Cyclin D1 (reviewed in Butt et al, 2005). In the absence of estrogen, Cyclin D1 expression is inhibited, at least in part, by the binding of a transcriptional repressor complex YY1:HDAC1 to the promoter (Cicatiello et al, 2004). Estrogen-stimulated induction of target gene expression appears in many cases to be primed by the binding of ‘pioneer’ transcription factors, such as FOXA and GATA family proteins (Carroll et al, 2005; Laganière et al, 2005; Eeckhoute et al, 2006; Hurtado et al, 2011; Kong et al, 2011; Theodorou et al, 2013; Swinstead et al, 2016; reviewed in Zaret and Carroll, 2011; Augello et al, 2011; Fiorito et al, 2013; Wilson and Giguere, 2008). FOXA factors have a winged helix structure that is thought to bind to closed chromatin structures in a manner analogous to linker histones, displacing linker histones and rendering the DNA more accessible to other transcription factors (reviewed in Zaret and Carroll, 2011). FOXA binding sites tend to be enriched at enhancer elements, characterized by H3K4 mono- and dimethylation, and expression of the histone demethylase KDM1A abrogates FOXA recruitment (Lupien et al, 2008). An enhancer element has been defined downstream of the CCND1 gene that mediates the binding of both the pioneer factor FOXA1 and estrogen-responsive ESR1 (Eeckhoute et al, 2006).

**Literature references**


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