Expression of PPARG

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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

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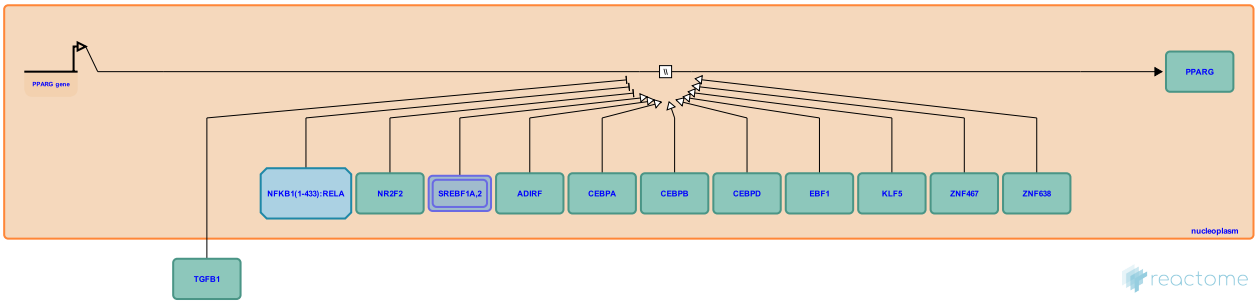
Expression of PPARG

Stable identifier: R-HSA-381283

Type: omitted

Compartments: nucleoplasm

Inferred from: Expression of Pparg (Mus musculus)



The transcription factors CEBPB, CEBPD, and KLF5 simultaneously bind the PPARG promoter and synergistically activate transcription of the PPARG gene. These three factors activate transcription after initial stimulation of adipocyte differentiation but then are replaced by CEBPA within 10 days. CEBPA and other factors may be responsible for long term maintenance of PPARG expression and the differentiated state.

Pre-adipose tissue contains both the widely expressed PPARG isoform 1 mRNA and the more tissue-specific PPARG isoform 2. The PPARG isoform 2 mRNA is translated to yield PPARG isoform 2 protein, which has 505 amino acid residues (57 KDa) and is the longest of the 4 observed variants. Isoform 2 is specific to preadipose and adipose tissue (Mukherjee et al. 1997). Confusingly, the longest variant is called isoform 1 in some publications.

In mouse, by 10 days after induction of adipocyte differentiation Cebpa, but neither Cebpb nor Cebpd, is detectable at the Pparg promoter. While adipocyte differentiation can proceed without Cebpa, adipocytes differentiated from Cebpa-knockout cells are insulin insensitive due to a defect in Glut4 (Slc2a4) vesicle trafficking.

The adipogenesis regulatory factor (ADIRF, aka AFRO, APM2, C10orf116) promotes adipogenic differentiation and stimulates transcription initiation of master adipogenesis factors like PPARG and CEBPA (Ni et al. 2013).

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