Characterization of transcription factor NURR1 concentration dependent biological pathways

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The transcriptional activity of NUR transcription factors is not regulated by endogenous ligands. Histological and neurochemical evidence shows that NUR transcription factors are closely associated with dopamine neurotransmission. Among NUR transcription factors, NURR1 plays an essential role in development and maintenance of midbrain dopamine neurons. Decreasing NURR1 expression is associated with Parkinson's disease and drug addiction. It has been reported that NURR1-responsive genes show concentration dependency of NURR1. This suggests that the biological pathways impacted by NURR1 could vary as a function of the NURR1 concentration. In order to characterize possible concentration-dependent effects of NURR1 on biological pathways, the whole genome microarray data for three different orders of magnitude of NURR1 expression were downloaded from NCBI's Gene Expression Omnibus (GEO) repository (http://www.ncbi.nlm.nih.gov/geo/) and the impacted pathways by each NURR1 expression level were examined by a commercial program Pathway Guide 3.0 (http://www.advaitabio.com) with KEGG.