EDGEdb

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C. elegans Differential Gene Expression database

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The *C. elegans* genome contains ~20,000 protein-coding genes and many non-coding RNA genes, including more than 100 microRNAs. Most of these genes are differentially expressed; i.e. at different times and in different cells. As a result, each cell/tissue/organ expresses a different subset of the total transcriptome. Differential gene expression is governed by regulatory transcription factors (TFs) that bind to *cis*-regulatory elements located in their target genes. In addition, gene expression can be regulated through the action of microRNAs that inhibit mRNA stability and/or translation.

We predict that ~934 of the ~20,000 worm genes encode TFs (Reece-Hoyes et al, 2005). To gain insight into *C. elegans* differential gene expression at a systems level, we systematically identify protein-DNA interactions (PDIs) between TFs and their target genes. To do so, we have developed a Gateway-compatible yeast one-hybrid (Y1H) system (Deplancke et al, 2004). This Y1H system is compatible with the *C. elegans* promoterome (Dupuy et al, 2004) for the creation of DNA baits, and the ORFeome for the creation of TF resources (i.e. Y1H "preys"). Using the Y1H system we have found several novel putative TFs (Deplancke et al, 2006). We are also mapping protein-protein interactions (PPIs) between TFs to identify TF homo- and heterodimers. To do so we employ high-throughput yeast two-hybrid (Y2H) assays. Finally, we are determining where TFs and their targets are expressed and how target expression is affected in the absence of a regulating TF. To do so, we fuse promoters to the green fluorescent protein (GFP) and examine GFP expression in living animals. This localization of expression mapping project is a collaboration between our laboratory and the groups of Marc Vidal (Dana-Farber Center for Cancer Systems Biology) and Ian Hope (University of Leeds, UK).

PDI, PPI and gene expression data generated by the Walhout laboratory and by other laboratories are collected and made available to the community through EDGEdb (elegans differential gene expression database). We encourage the C. elegans community to send us their PDI and TF dimerization PPI data to keep the database current. For more information on *C. elegans* genes and biology, please visit WormBase. For more information on the worm PPI interactome, the ORFeome and Promoterome, please visit the Vidal lab website. For more information regarding gene expression patterns, please visit the Hope lab website. For more information about the Walhout laboratory, please visit the lab website.

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C. elegans gene or ORF — Search — A

e.g. : one word (C18D1.1, c18d1.1, or die-1), or several words separated by space.

DNA bait — Search — B

e.g. : one word (Pztf-4, pZTF-4, or pz*-4), or several words separated by space.

DNA Binding Domain — AP-2 — Search — C

Publications — A gateway-compatible yeast one-hybr... — Search — D

E — Get transcription factors files

F — Get Publications / data sets

G — Interaction browser

H — Interaction export

I — Export all interactions

J — Import interactions (outside user)

UMASS

Worm Base Release :160

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Home > Interaction Browser

G

Interaction Browser

Transcription Factors | DNA Baits

Transcription Factors

Transcription Factors involved in interactions

Name : alr-1	*alr-1* R08B4.2 WBGene00044330
Name : ast-1	*ast-1* T08H4.3 WBGene00020368
Name : athp-1	*athp-1* C44B9.4 WBGene00008081

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Home > Interaction export

HELP (?)

H

Interaction Export

Search from : ○ Transcription factors ◉ DNA baits — View DNA baits

Search | Reset

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