

Representation of cis-regulatory region in a model organism database

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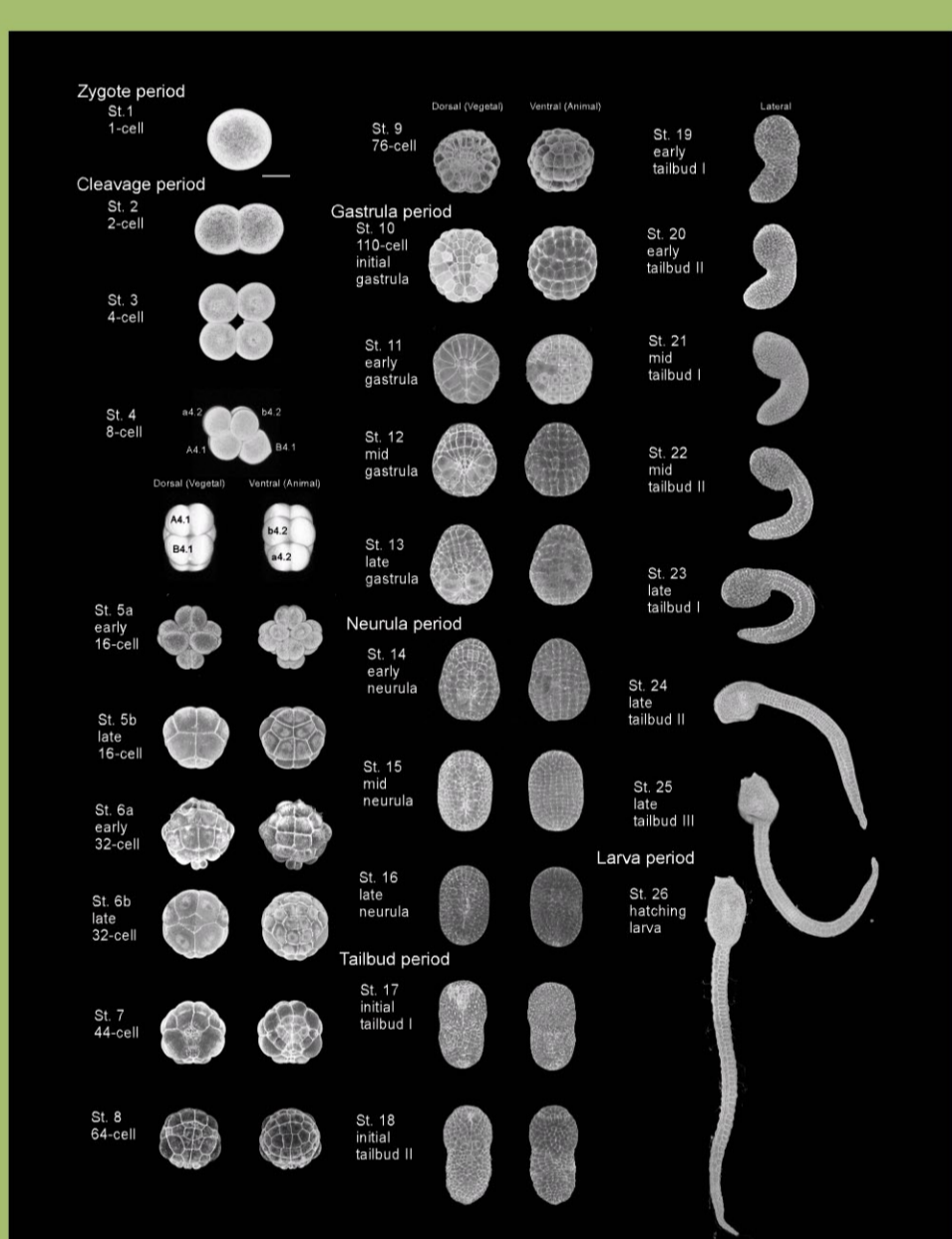
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Keywords

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cis-regulatory regions ;
model organism database ;
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ChIP-on-chip ; ChIP-Seq ;
Nucleosomes ;
Conservation data ;



FABA (Four-dimensional Ascidian Body Atlas)



Ciona intestinalis



Ciona savignyi Ciona intestinalis

ANISEED & data integration

ANISEED (Ascidian Network for InSitu Expression and Embryological Data) is a database designed to offer a representation of ascidian embryonic development at the level of the genome (cis-regulatory sequences, spatial gene expression, protein annotation), of the cell (cell shapes, fate, lineage) or of the whole embryo (anatomy, morphogenesis).

To identify cis-regulatory regions in the genome using ongoing technological revolutions, we decided to implement this database with data from experiments of ChIP-on-chip and ChIP-Seq, and compare them with nucleosomes, conservation data and cis-regulatory modules.

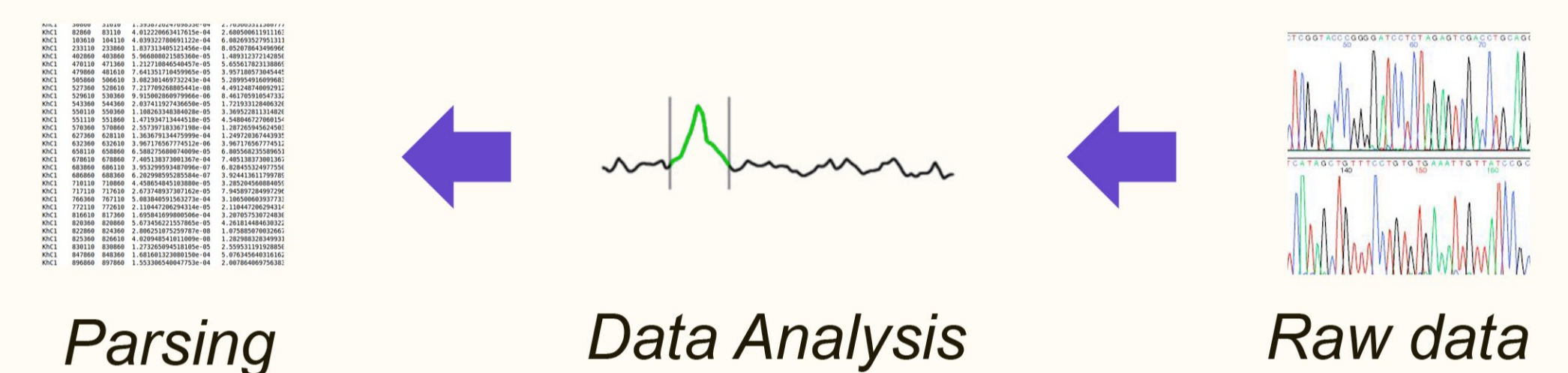
ChIP-on-chip

The ChIP-on-chip (Chromatin Immunoprecipitation on chip) is a microarray-based method to measure genome wide binding sites for proteins of interest.



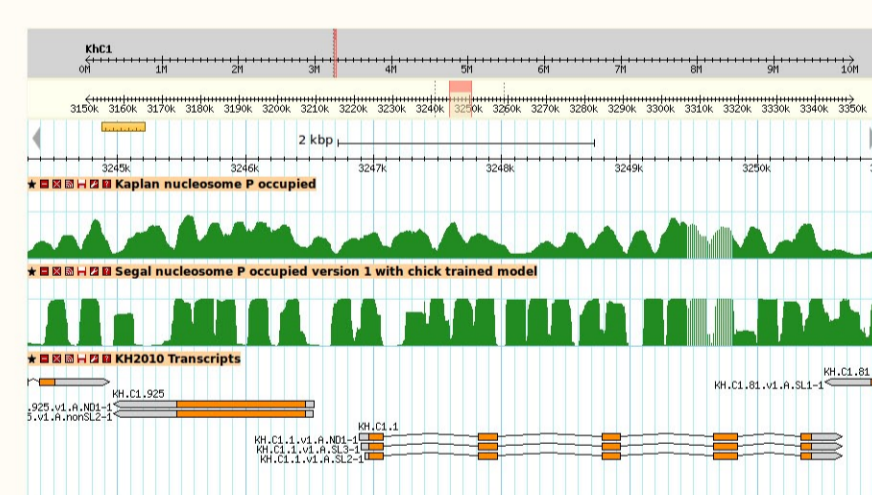
ChIP-Seq

ChIP Sequencing is also used to analyze protein interactions with DNA, but combines chromatin immunoprecipitation with massively parallel DNA sequencing.



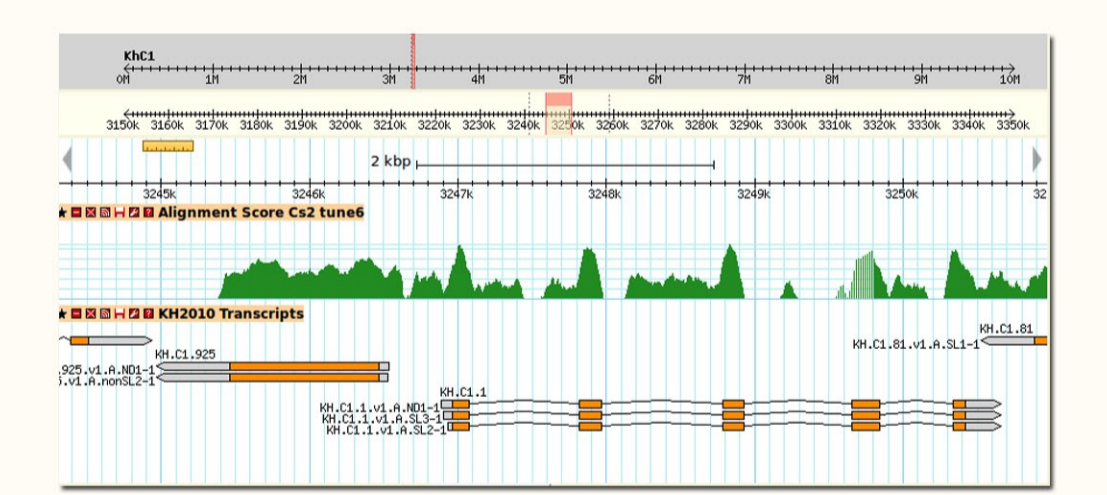
Nucleosomes

Nucleosomes data were used to determine where a transcription factor can not bind on the genome.

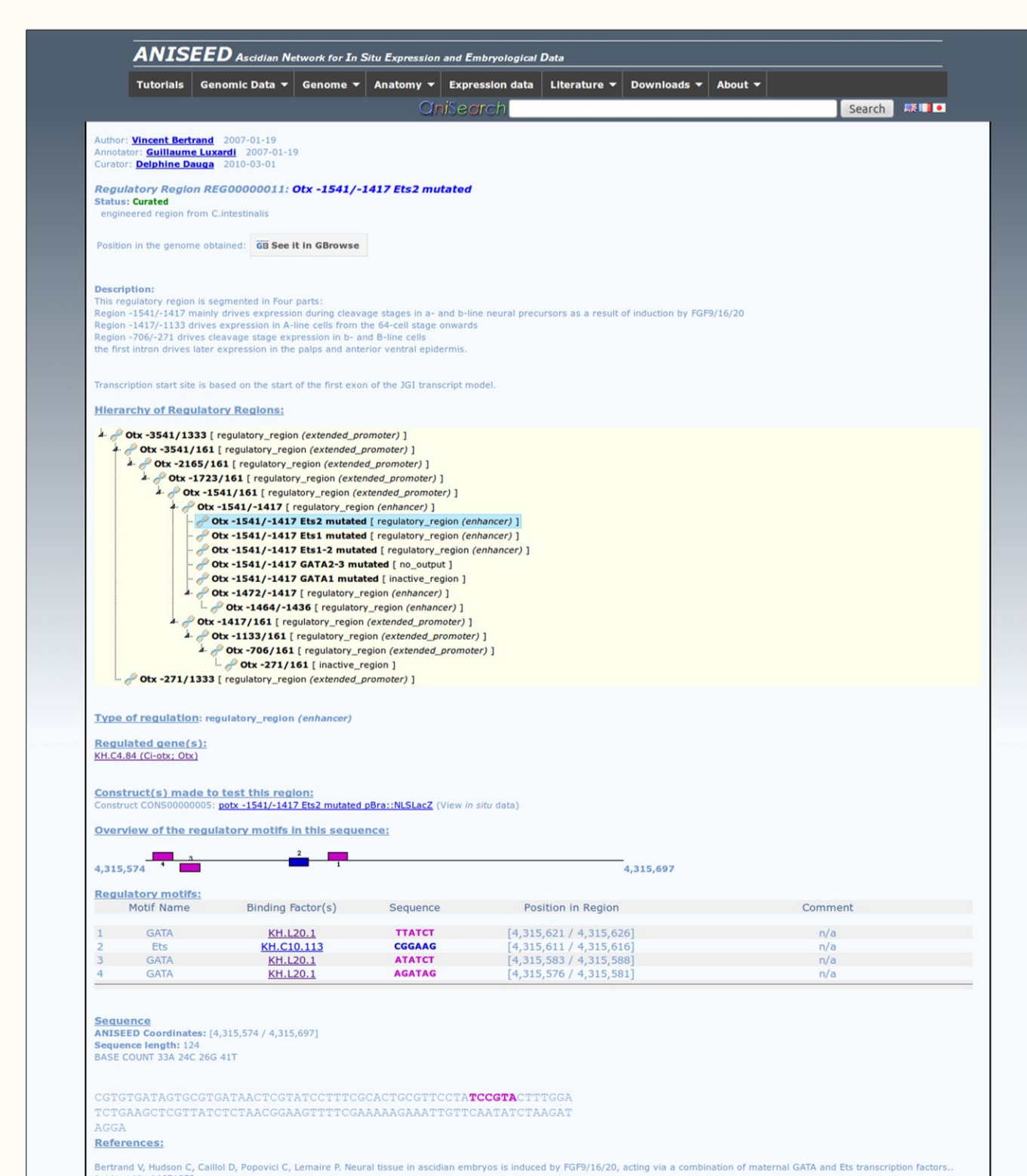


Conservation

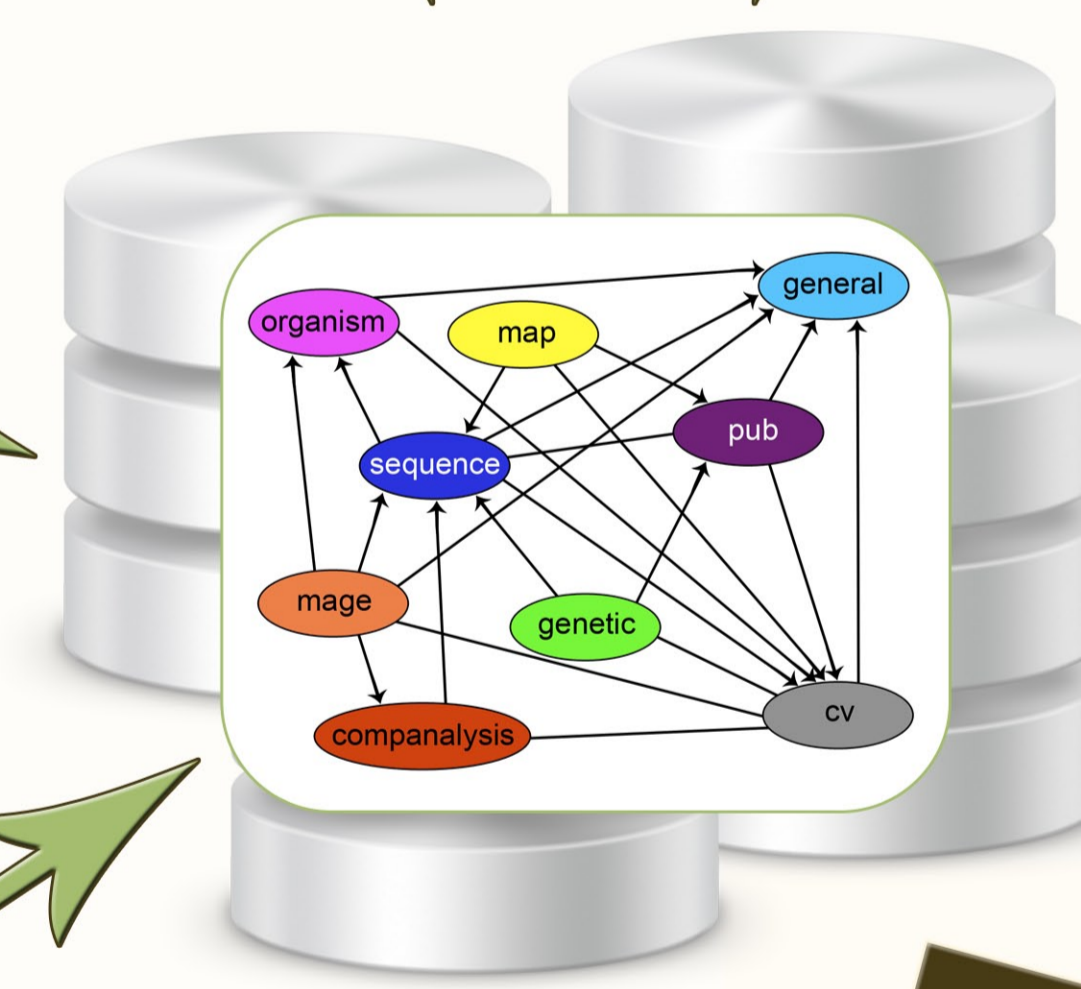
Cis-regulatory regions are highly conserved, conservation data can be used to confirm an hypothesis.



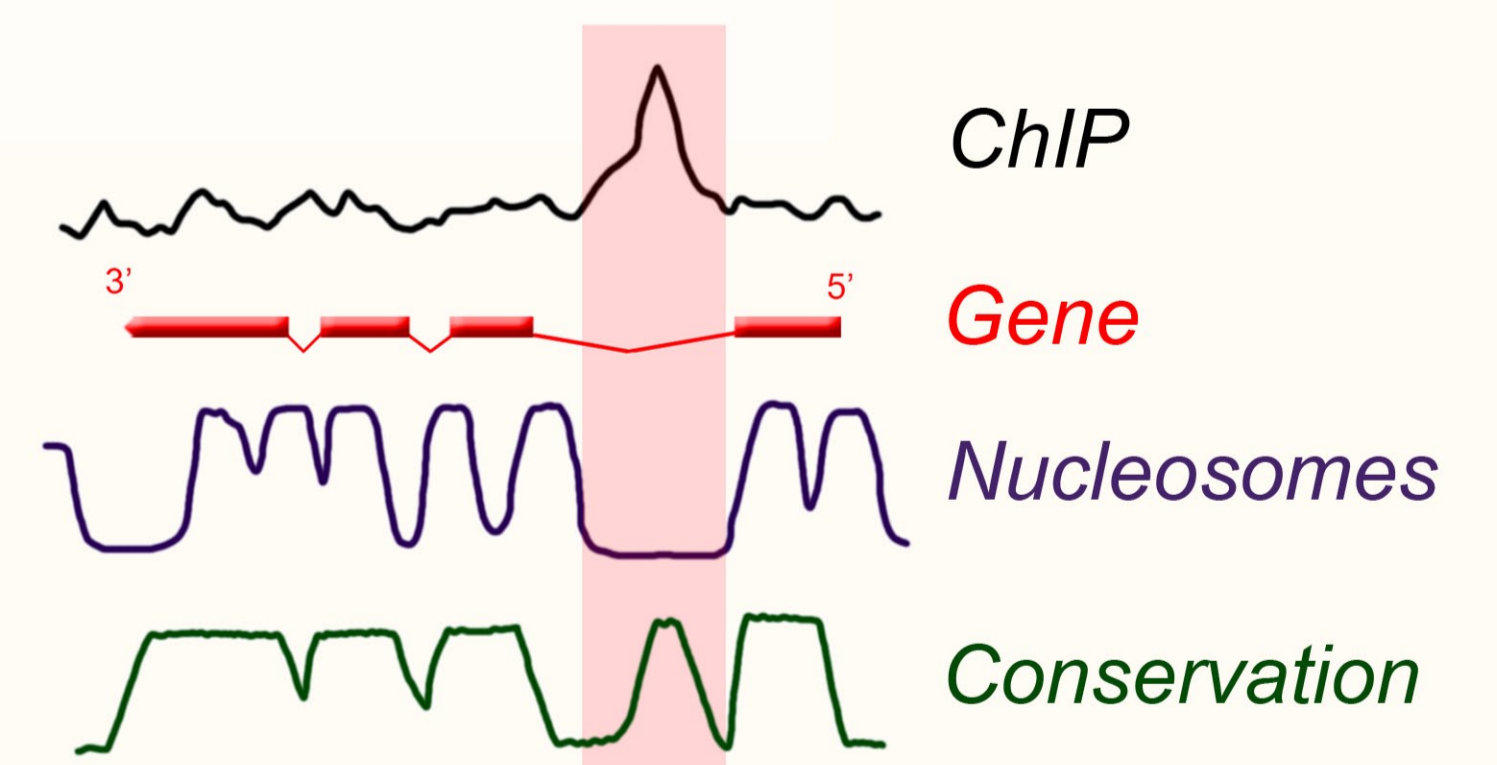
Cis-regulatory modules



Curated datas on ANISEED can confirm the current analysis

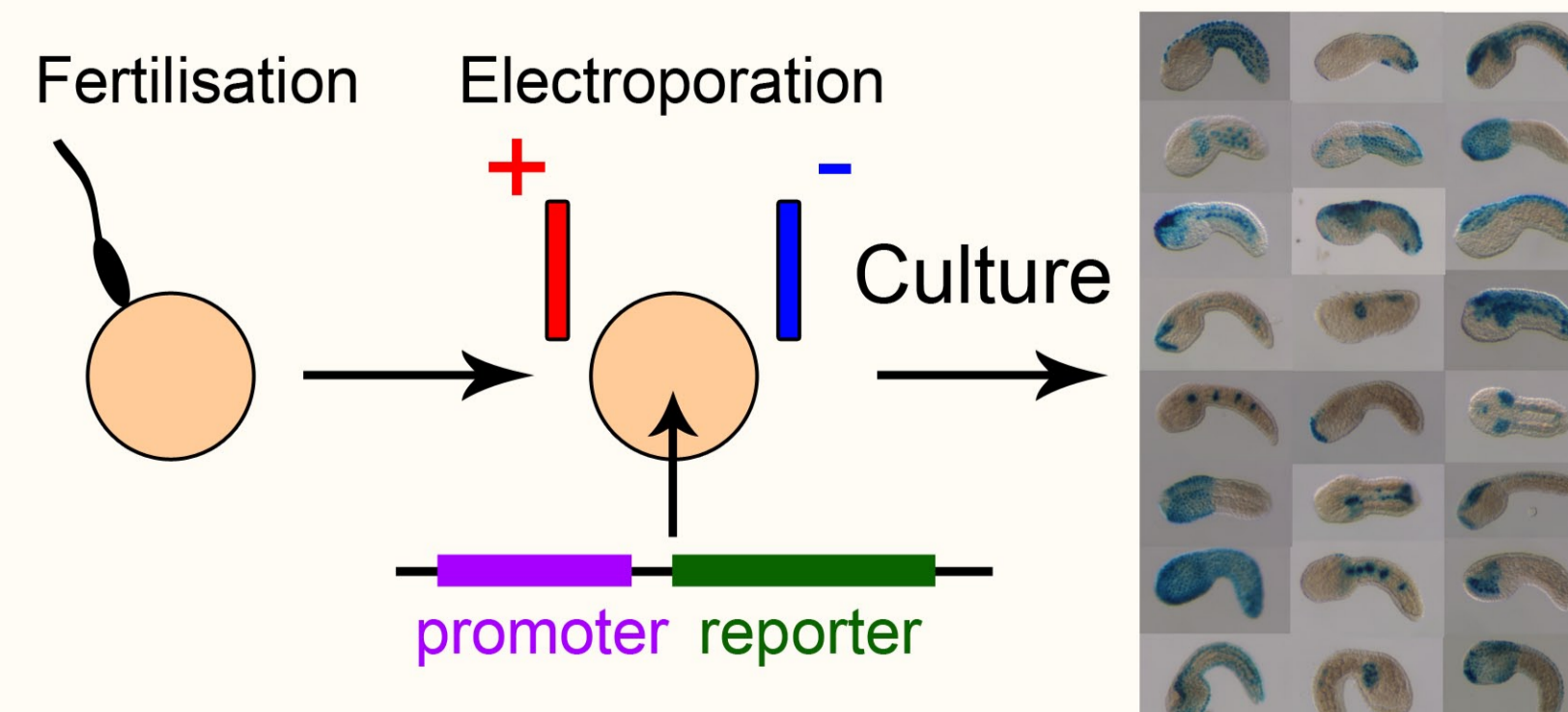


Chado database



Data comparison

Experimental validation



Are the predicted Cis-regulatory regions active during embryonic development?

Test of these candidate regions by in ovo electroporation.

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