

Ferd3l Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Ferd3l

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ferd3l* gene. The schematic diagram is as follows:



- The *Ferd3l* gene has 1 transcript. According to the structure of *Ferd3l* gene, exon1 of *Ferd3l-201* (ENSMUST00000061035.3) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ferd3l* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit impaired caudal neural tube floor plate neuron maturation and reduced mesencephalic dopaminergic neurons.
- The flox region contains part of the Gm40383 gene, which may delete it after Cre.
- The *Ferd3l* gene is located on the Chr12. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Ferd3l Fer3 like bHLH transcription factor [*Mus musculus* (house mouse)]

Gene ID: 114712, updated on 13-Mar-2020

Summary

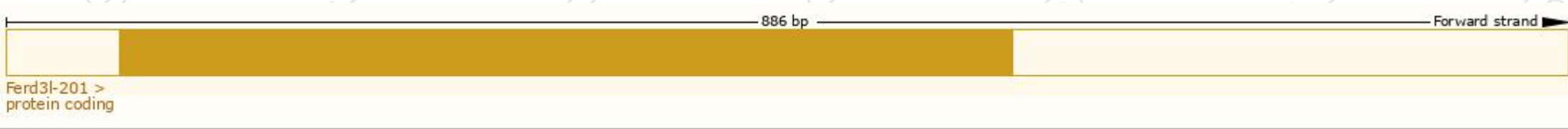
Official Symbol	Ferd3l provided by MGI
Official Full Name	Fer3 like bHLH transcription factor provided by MGI
Primary source	MGI:MGI:2150010
See related	Ensembl:ENSMUSG00000046518
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Nato; Ptfb; fer3; Nato3; Mnato3; Ntwist; N-twist; bHLHa31
Orthologs	human all

Transcript information (Ensembl)

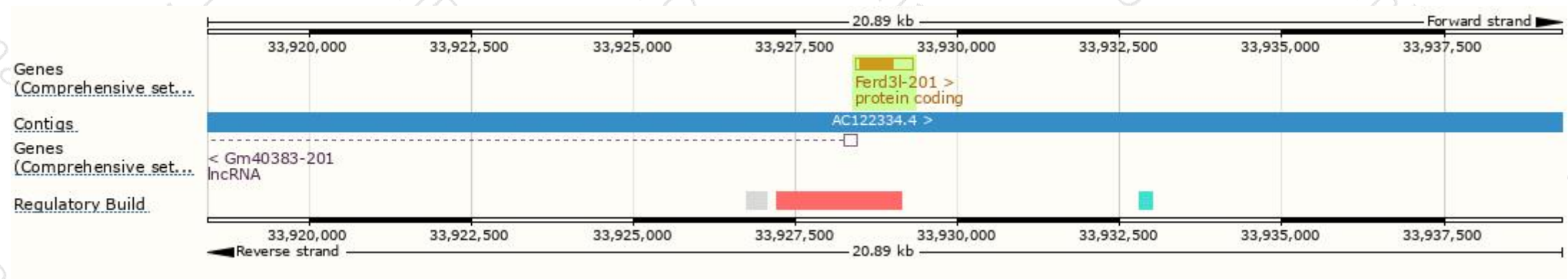
The gene has 1 transcript,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags		
Ferd3l-201	ENSMUST000000061035.3	886	168aa	Protein coding	CCDS25878	Q923Z4	TSL:NA	GENCODE basic	APPRIS P1

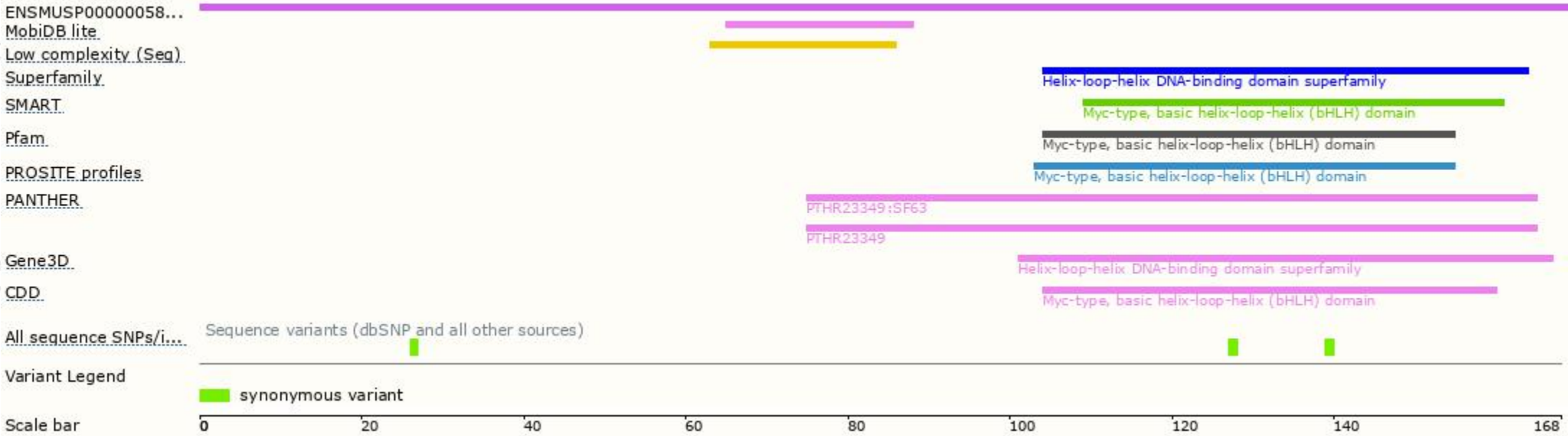
The strategy is based on the design of *Ferd3l-201* transcript,The transcription is shown below



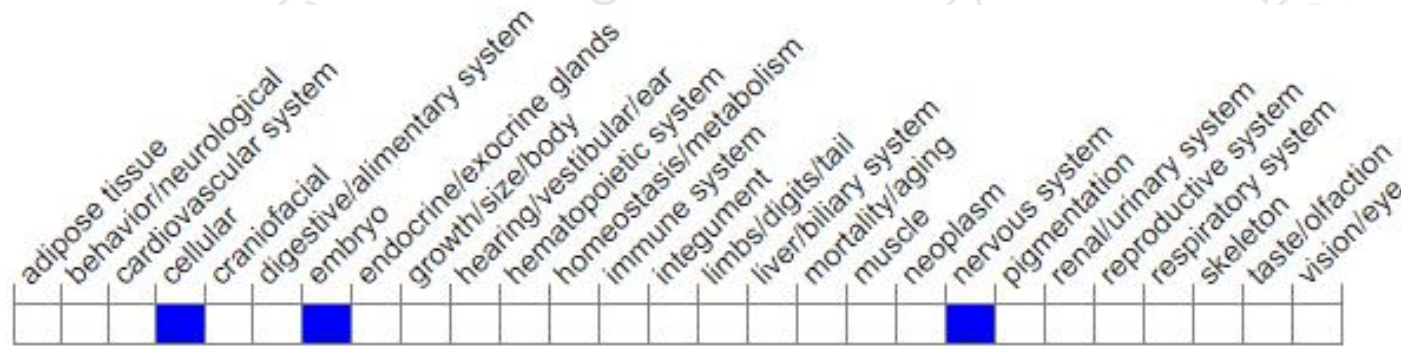
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, Mice homozygous for a knock-out allele exhibit impaired caudal neural tube floor plate neuron maturation and reduced mesencephalic dopaminergic neurons.

If you have any questions, you are welcome to inquire.

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