

Irx6 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Irx6

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Irx6* gene. The schematic diagram is as follows:



- The *Irx6* gene has 2 transcripts. According to the structure of *Irx6* gene, exon2-exon4 of *Irx6-201* (ENSMUST00000034185.12) transcript is recommended as the knockout region. The region contains 664bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Irx6* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, mice homozygous for a null mutation display abnormalities in retinal bipolar cell subtype identity and reduced electroretinography a and b wave amplitudes.
- The *Irx6* gene is located on the Chr8. 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)

Irx6 Iroquois homeobox 6 [*Mus musculus* (house mouse)]



Gene ID: 64379, updated on 4-Dec-2019

Summary

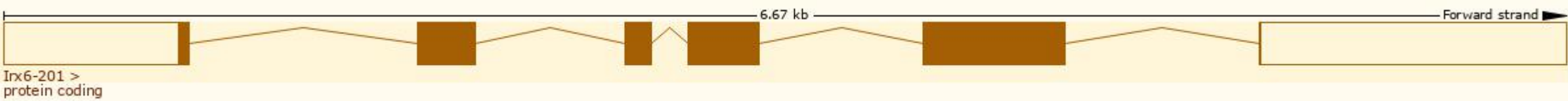
Official Symbol	Irx6 provided by MGI
Official Full Name	Iroquois homeobox 6 provided by MGI
Primary source	MGI:MGI:1927642
See related	Ensembl:ENSMUSG000000031738
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in limb E14.5 (RPKM 2.8), whole brain E14.5 (RPKM 0.9) and 3 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

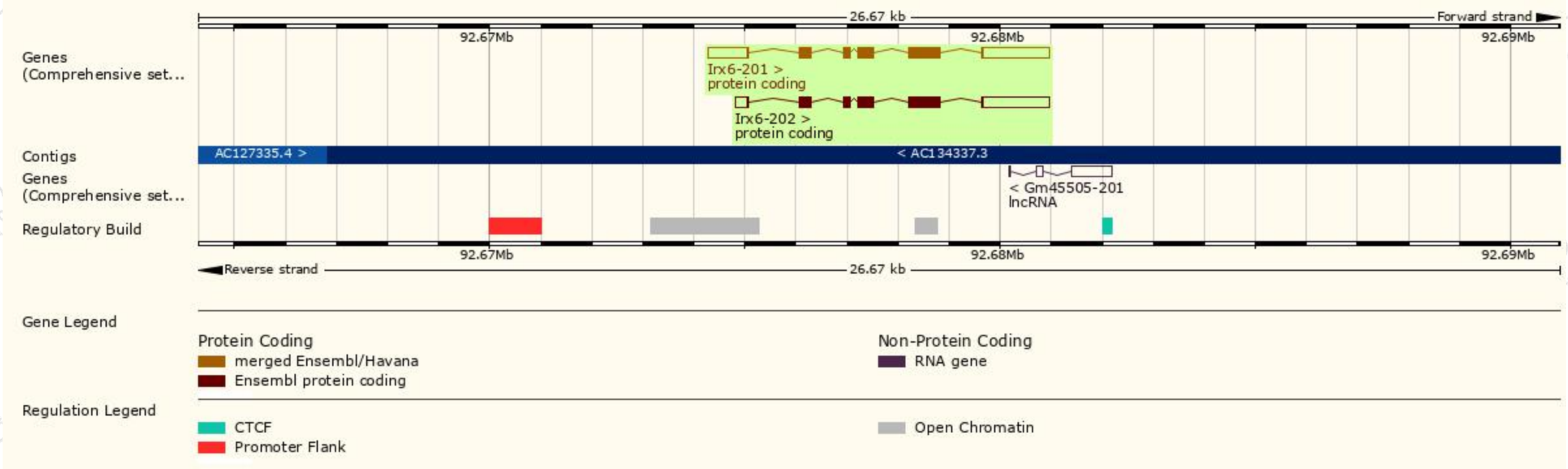
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Irx6-201	ENSMUST000000034185.12	3370	439aa	 Protein coding	CCDS40428	Q8BFT1	TSL:1 GENCODE basic APPRIS P3
Irx6-202	ENSMUST000000167261.2	2829	438aa	 Protein coding	CCDS80913	Q9ER75	TSL:1 GENCODE basic APPRIS ALT2

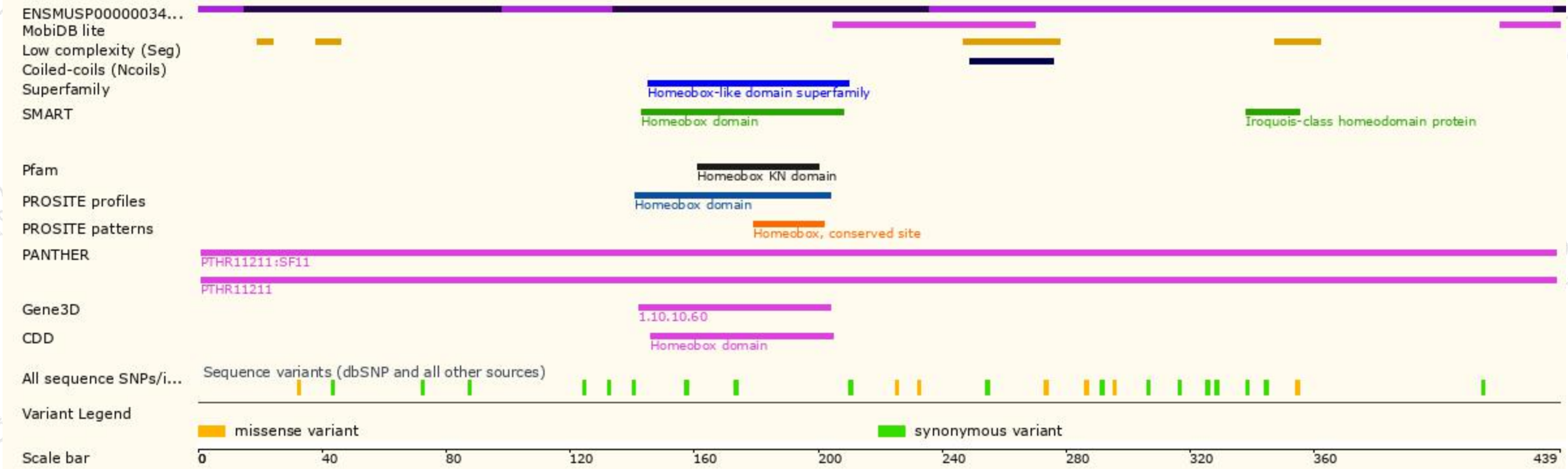
The strategy is based on the design of *Irx6-201* transcript, the transcription is shown below:



Genomic location distribution

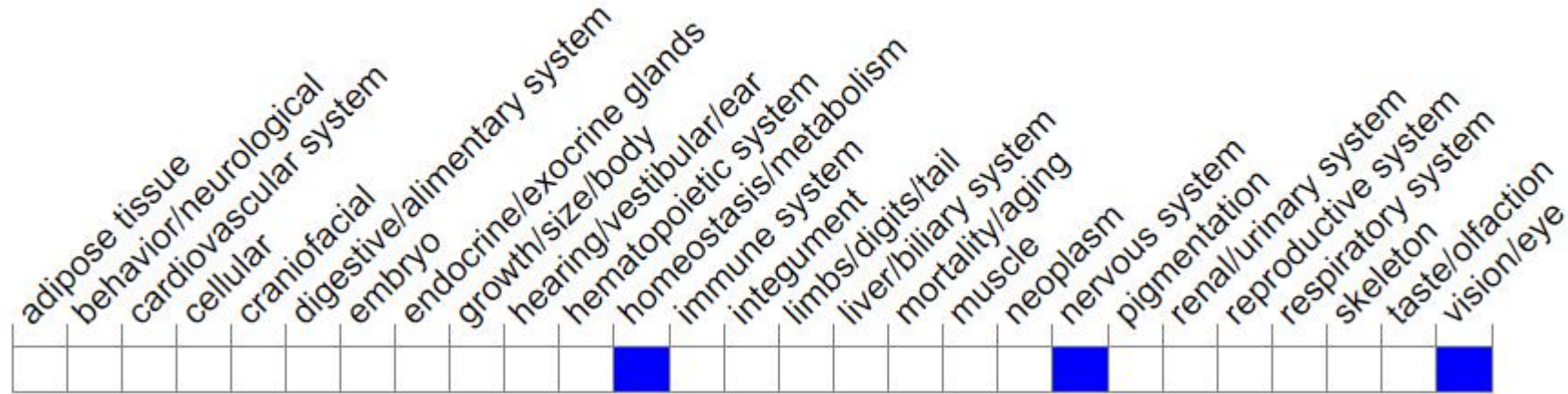


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



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 null mutation display abnormalities in retinal bipolar cell subtype identity and reduced electroretinography a and b wave amplitudes.

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

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