

Klhl1 Cas9-CKO Strategy

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Project Overview

Project Name

Klhl1

Project type

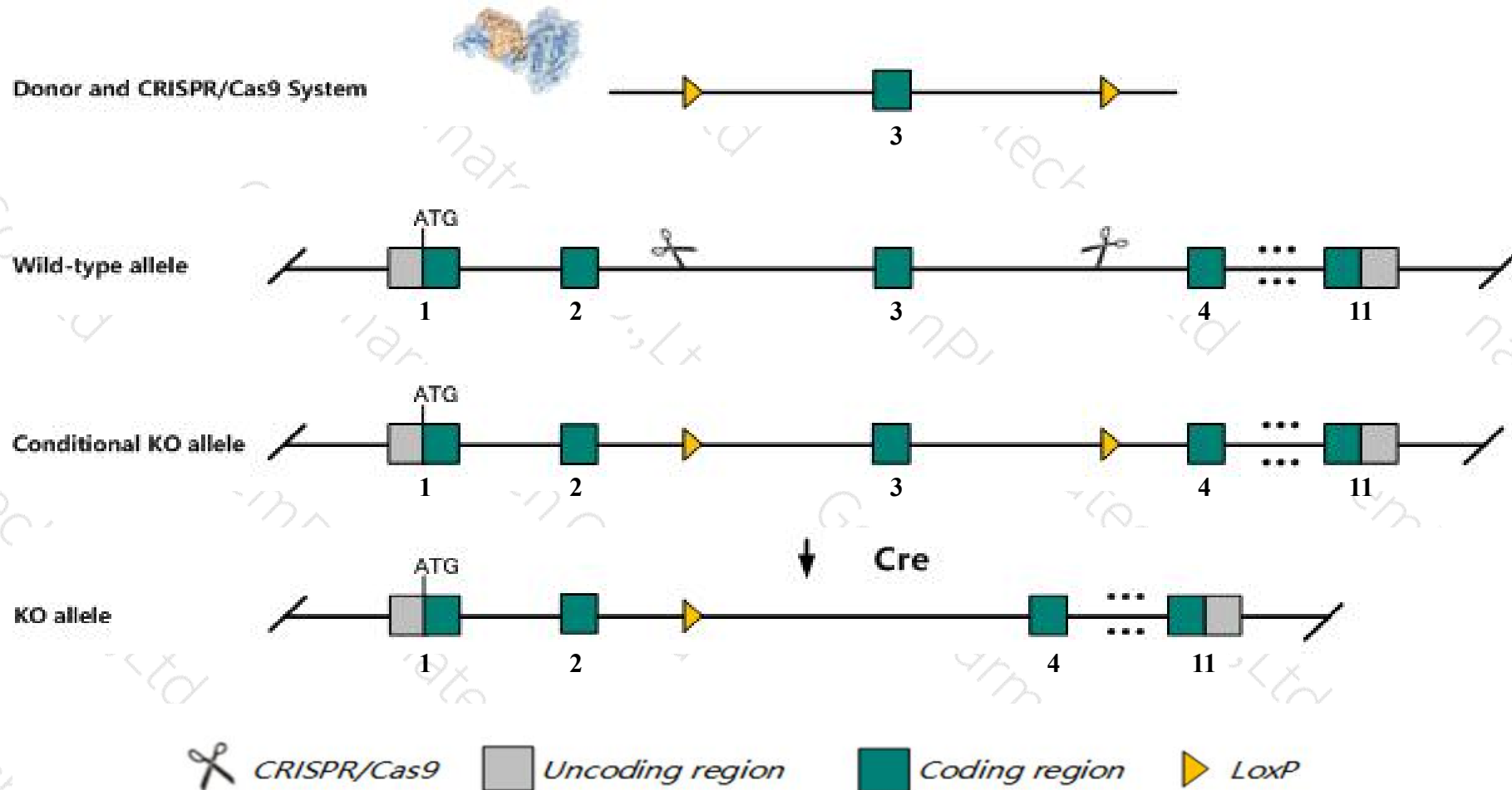
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Klhl1* gene. The schematic diagram is as follows:



Technical routes

- The *Klhl1* gene has 1 transcript. According to the structure of *Klhl1* gene, exon3 of *Klhl1*-201 (ENSMUST00000022666.8) transcript is recommended as the knockout region. The region contains 137bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Klhl1* gene. The brief process is as follows: CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, mice both homozygous and heterozygous for disruption of this gene develop abnormalities in gait and defects in motor coordination with time. Dendritic atrophy of Purkinje cells is also seen.
- The *Klhl1* gene is located on the Chr14. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Klhl1 kelch-like 1 [*Mus musculus* (house mouse)]

Gene ID: 93688, updated on 13-Aug-2019

Summary

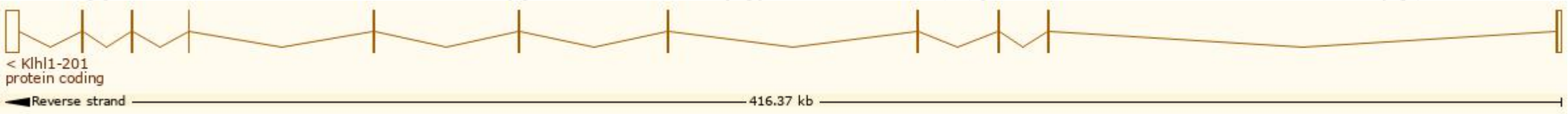
Official Symbol	Klhl1 provided by MGI
Official Full Name	kelch-like 1 provided by MGI
Primary source	MGI:MGI:2136335
See related	Ensembl:ENSMUSG00000022076
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	mKIAA1490
Expression	Biased expression in CNS E18 (RPKM 3.1), whole brain E14.5 (RPKM 2.5) and 5 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

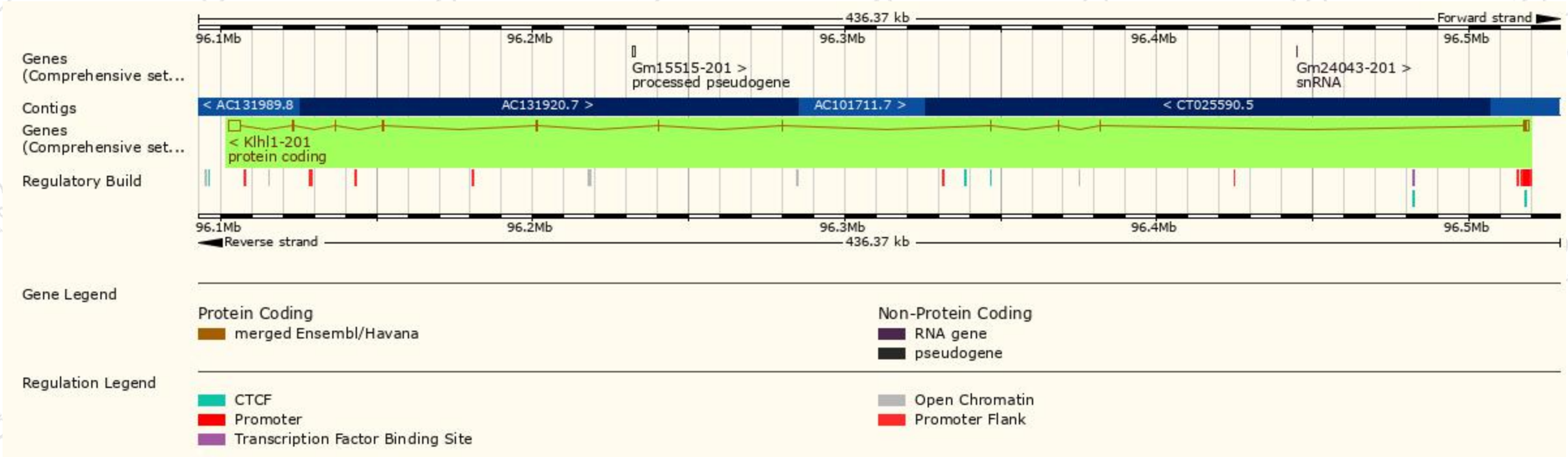
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Klhl1-201	ENSMUST00000022666.8	6645	751aa	Protein coding	CCDS27308	Q9J174	TSL:1 Gencode basic APPRIS P1

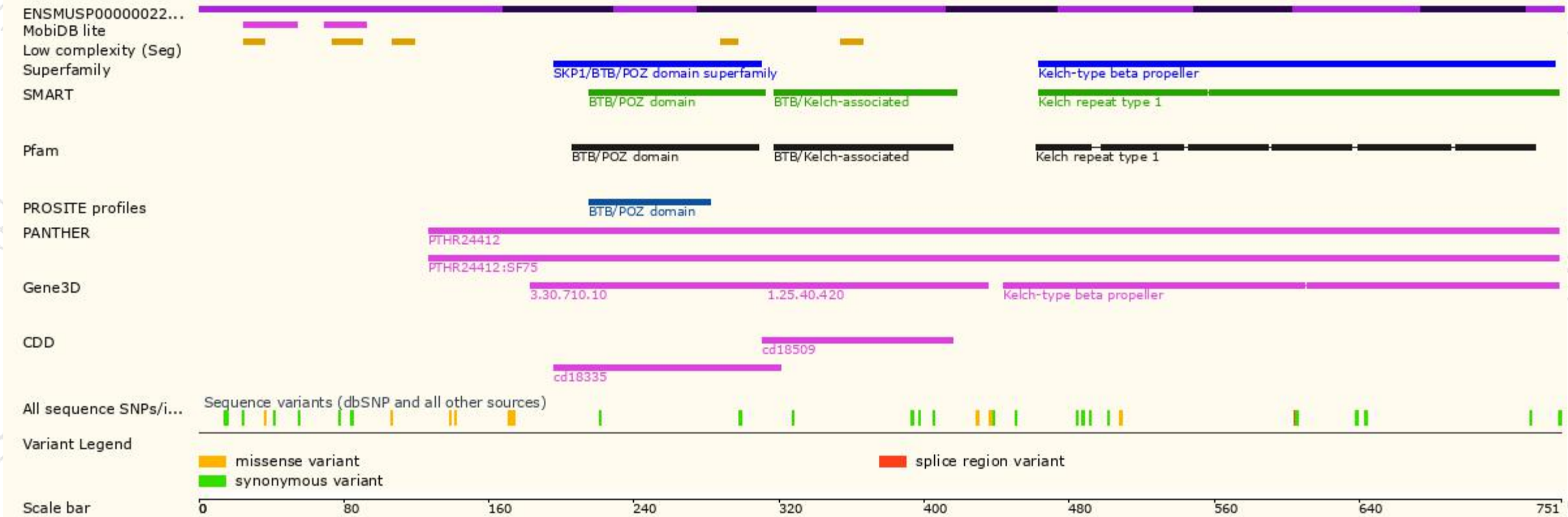
The strategy is based on the design of *Klhl1-201* transcript, the transcription is shown below:



Genomic location distribution

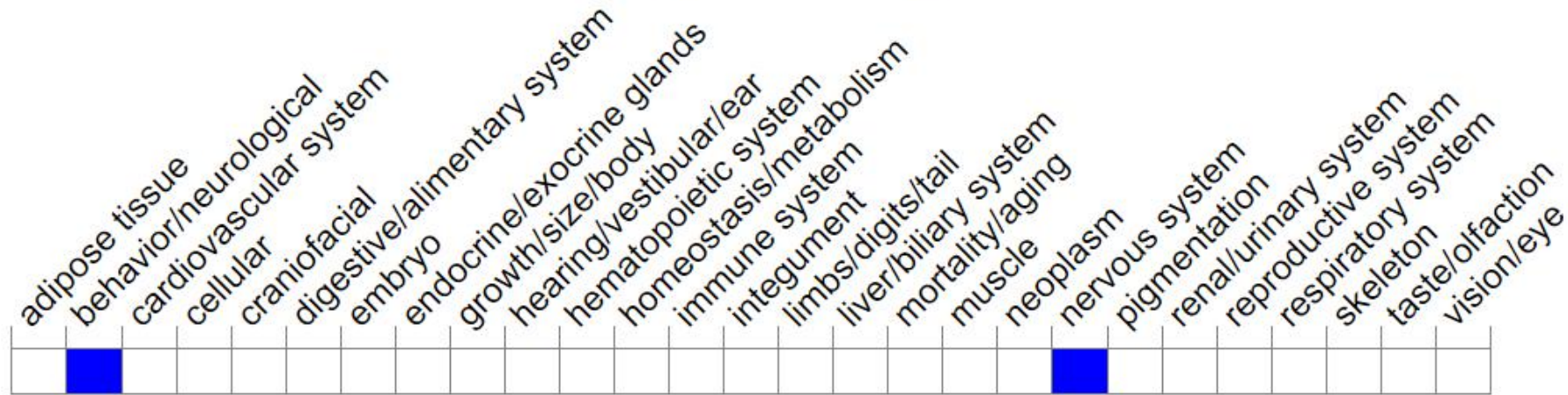


Protein domain



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 both homozygous and heterozygous for disruption of this gene develop abnormalities in gait and defects in motor coordination with time. Dendritic atrophy of Purkinje cells is also seen.

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

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