

Ccn4 Cas9-CKO Strategy

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Project Overview

Project Name

Ccn4

Project type

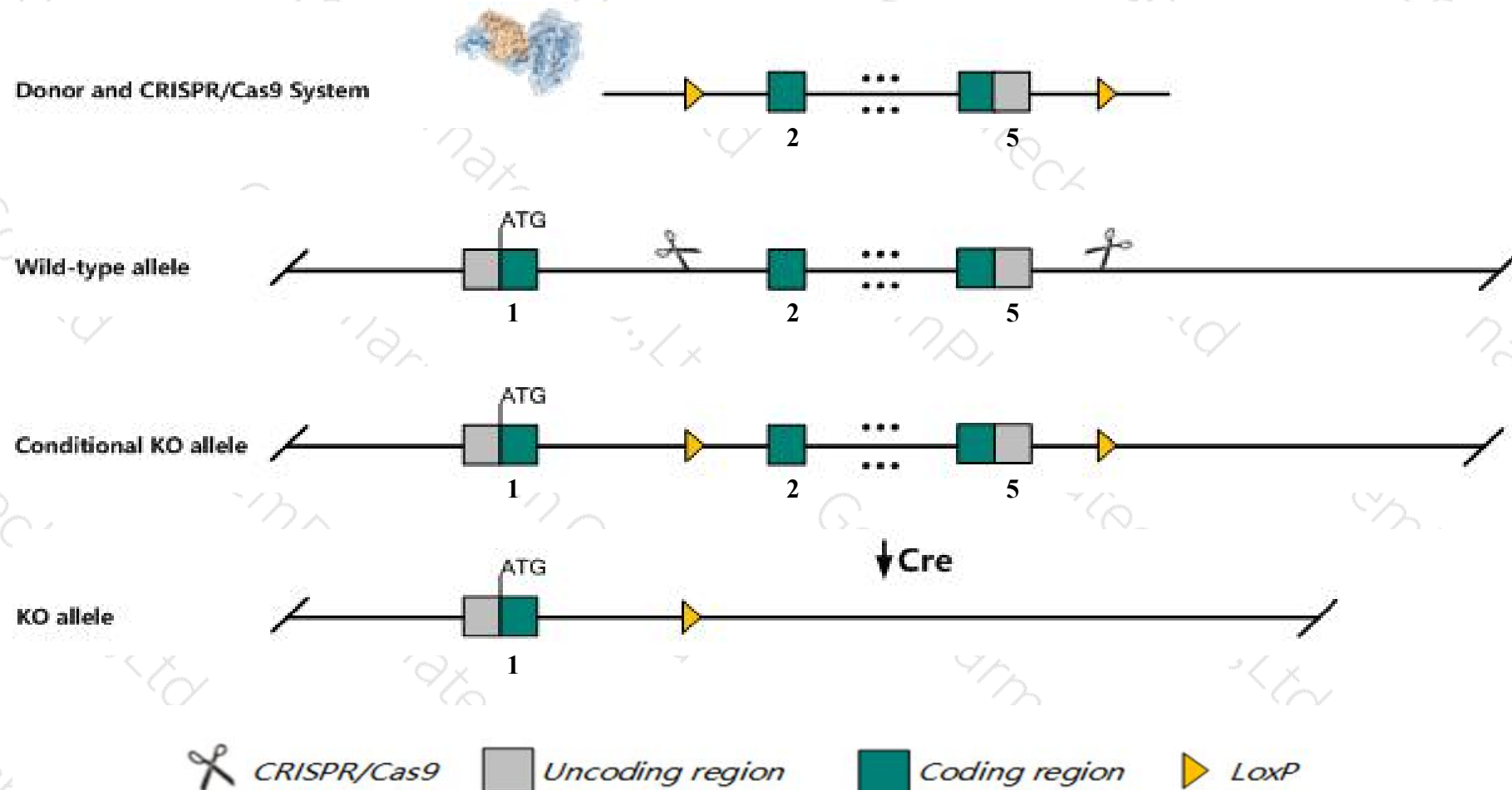
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ccn4* gene. The schematic diagram is as follows:



Technical routes

- The *Ccn4* gene has 6 transcripts. According to the structure of *Ccn4* gene, exon2-exon5 of *Ccn4-201* (ENSMUST00000005255.8) transcript is recommended as the knockout region. The region contains most 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 *Ccn4* 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 homozygous for a targeted mutation exhibit impaired motor coordination during inverted screen testing.
- The *Ccn4* gene is located on the Chr15. 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)

Ccn4 cellular communication network factor 4 [*Mus musculus* (house mouse)]

Gene ID: 22402, updated on 21-Oct-2019

Summary

- Official Symbol** Ccn4 provided by [MGI](#)
- Official Full Name** cellular communication network factor 4 provided by [MGI](#)
- Primary source** [MGI:MGI:1197008](#)
- See related** [Ensembl:ENSMUSG000000005124](#)
- 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
- Also known as** Elm1; Wisp1; AW146261
- Expression** Broad expression in limb E14.5 (RPKM 9.0), ovary adult (RPKM 6.7) and 17 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 15 D2; 15 29.3 cM [See Ccn4 in Genome Data Viewer](#)

Exon count: 5

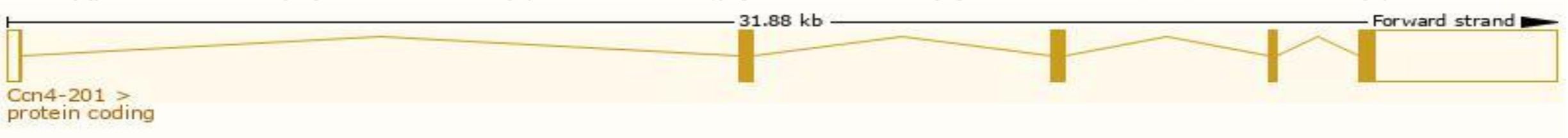
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	15	NC_000081.6 (66891369..66923201)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	15	NC_000081.5 (66722955..66754761)

Transcript information (Ensembl)

The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccn4-201	ENSMUST00000005255.8	5097	367aa	Protein coding	CCDS27510	Q54775 Q3UFJ5	TSL:1 GENCODE basic APPRIS P1
Ccn4-202	ENSMUST00000118823.1	708	153aa	Protein coding	-	D3Z6X6	TSL:5 GENCODE basic
Ccn4-204	ENSMUST00000147079.7	1714	52aa	Nonsense mediated decay	-	A0A0R4J1T7	TSL:1
Ccn4-203	ENSMUST00000133863.1	957	No protein	lncRNA	-	-	TSL:5
Ccn4-206	ENSMUST00000230535.1	930	No protein	lncRNA	-	-	
Ccn4-205	ENSMUST00000229246.1	851	No protein	lncRNA	-	-	

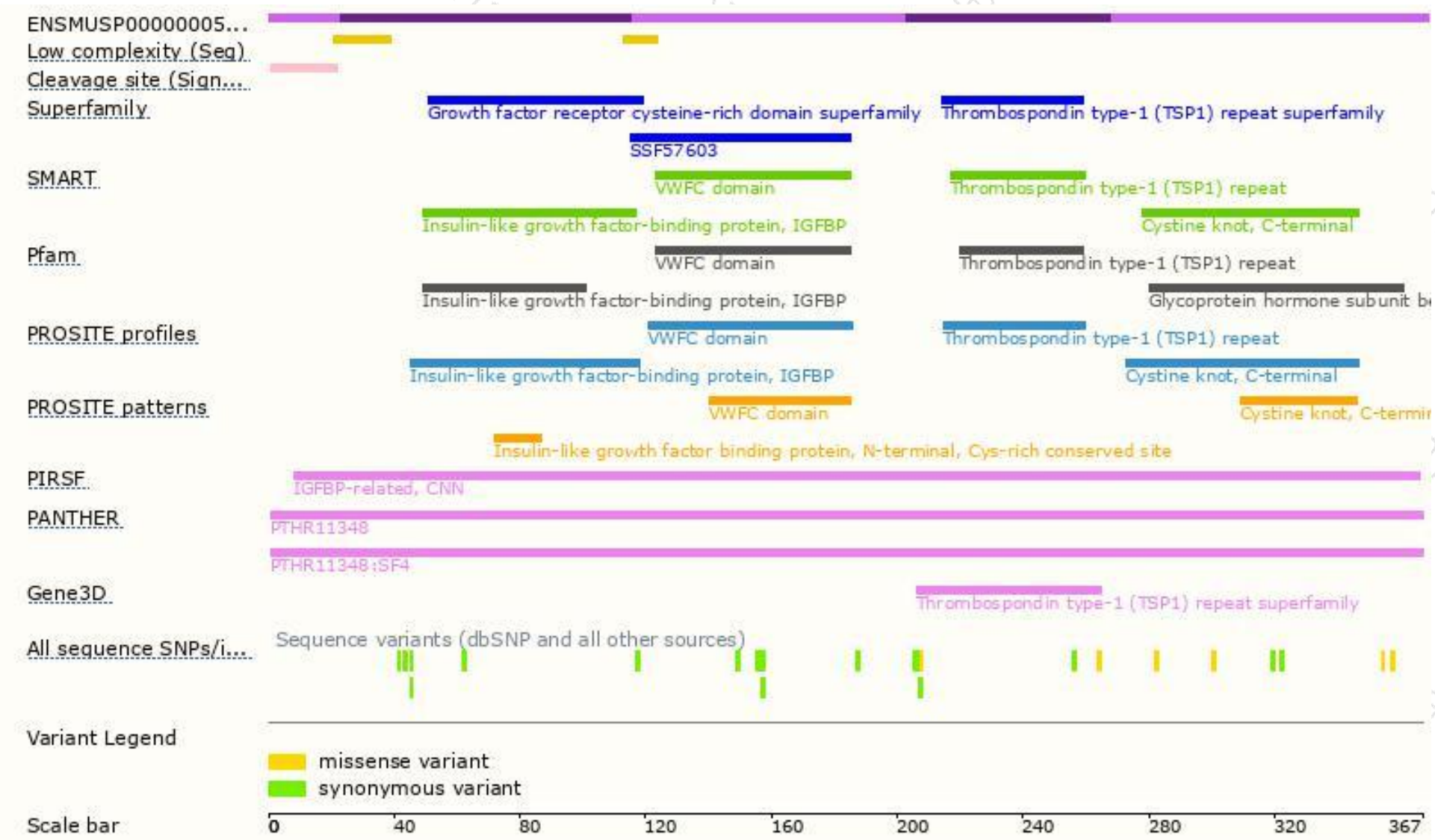
The strategy is based on the design of *Ccn4-201* transcript,The transcription is shown below



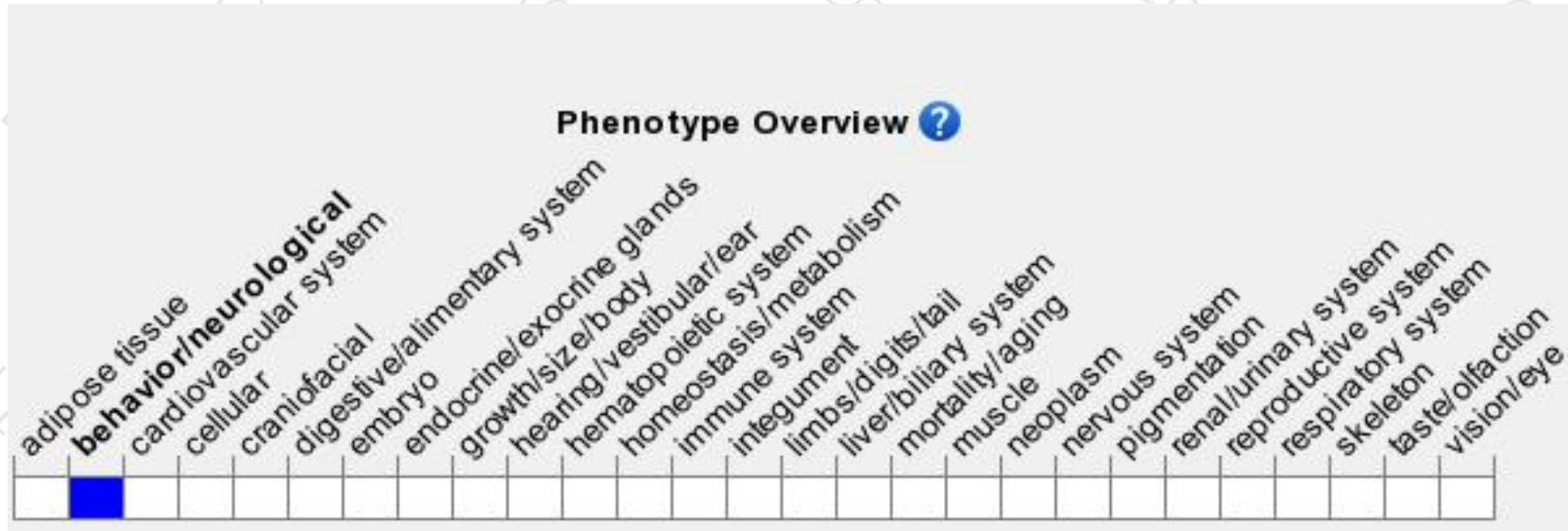
Genomic location distribution



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 targeted mutation exhibit impaired motor coordination during inverted screen testing.

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

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