

Dync1li1 Cas9-CKO Strategy

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Reviewer :

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Design Date:

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Project Overview

Project Name

Dync1li1

Project type

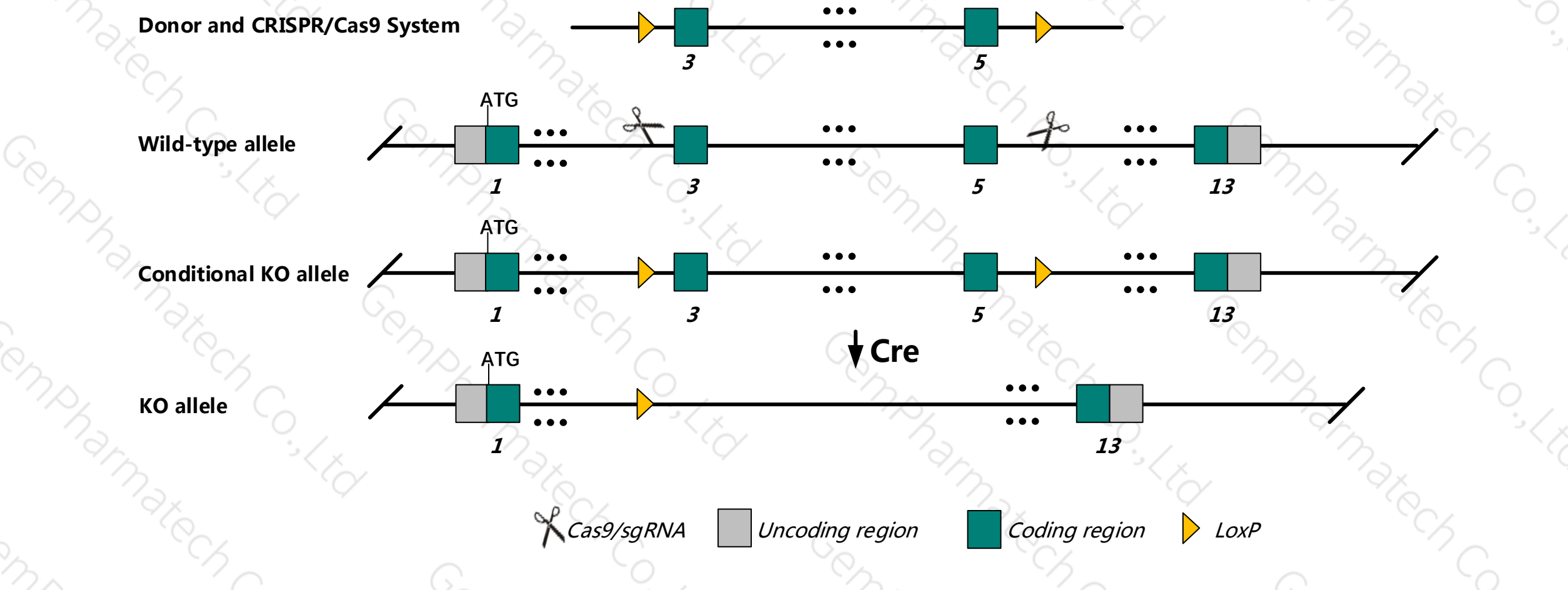
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dync1li1* gene. The schematic diagram is as follows:



- The *Dync1li1* gene has 2 transcripts. According to the structure of *Dync1li1* gene, exon3-exon5 of *Dync1li1*-201 (ENSMUST00000047404.6) transcript is recommended as the knockout region. The region contains 518bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dync1li1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues or cell types.

- According to the existing MGI data , Mice homozygous for an ENU-induced allele exhibit increased anxiety-related response, increased dendrite length, increased neuron migration, and decreased lysosome trafficking.
- The *Dync1li1* gene is located on the Chr9. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Dync1li1 dynein cytoplasmic 1 light intermediate chain 1 [*Mus musculus* (house mouse)]

Gene ID: 235661, updated on 13-Mar-2020

Summary

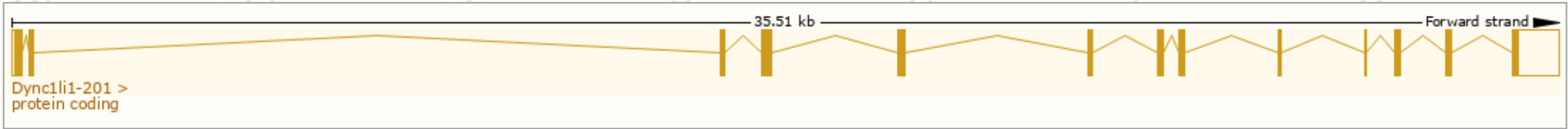
Official Symbol	Dync1li1 provided by MGI
Official Full Name	dynein cytoplasmic 1 light intermediate chain 1 provided by MGI
Primary source	MGI:MGI:2135610
See related	Ensembl:ENSMUSG00000032435
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	LIC-1; Dncl1; 1110053F02Rik
Expression	Ubiquitous expression in CNS E18 (RPKM 27.9), CNS E14 (RPKM 23.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

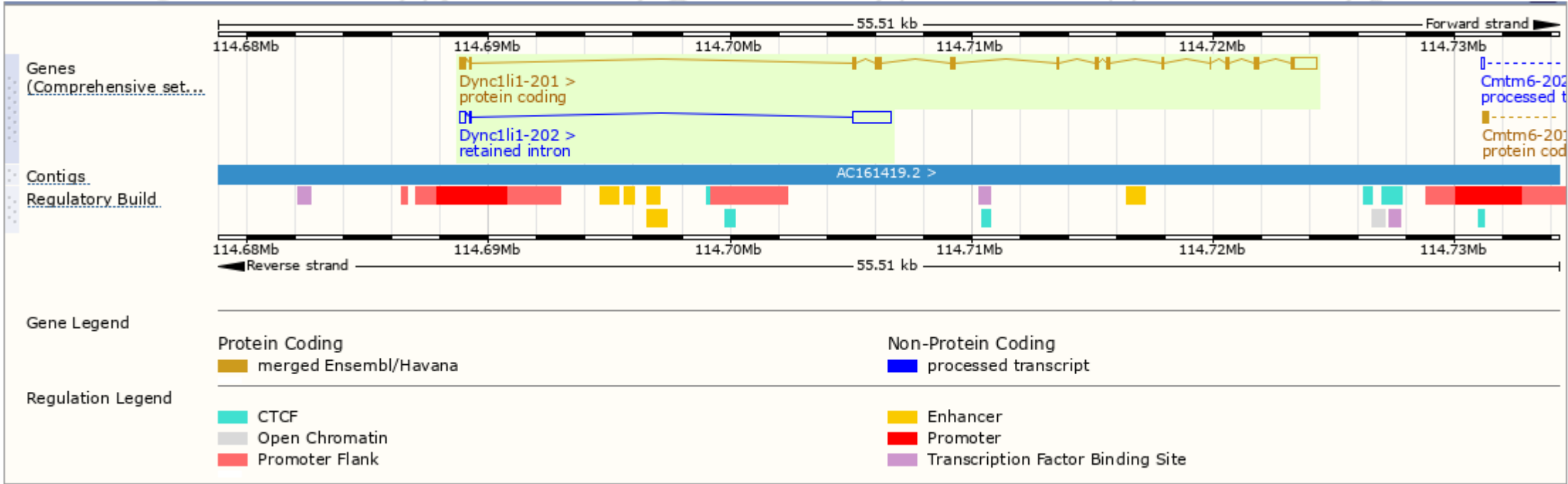
The gene has 2 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dync1li1-201	ENSMUST00000047404.6	2601	523aa	Protein coding	CCDS23595	Q3TWG5 Q8R1Q8	TSL:1 Gencode basic APPRIS P1
Dync1li1-202	ENSMUST00000215345.1	1930	No protein	Retained intron	-	-	TSL:1

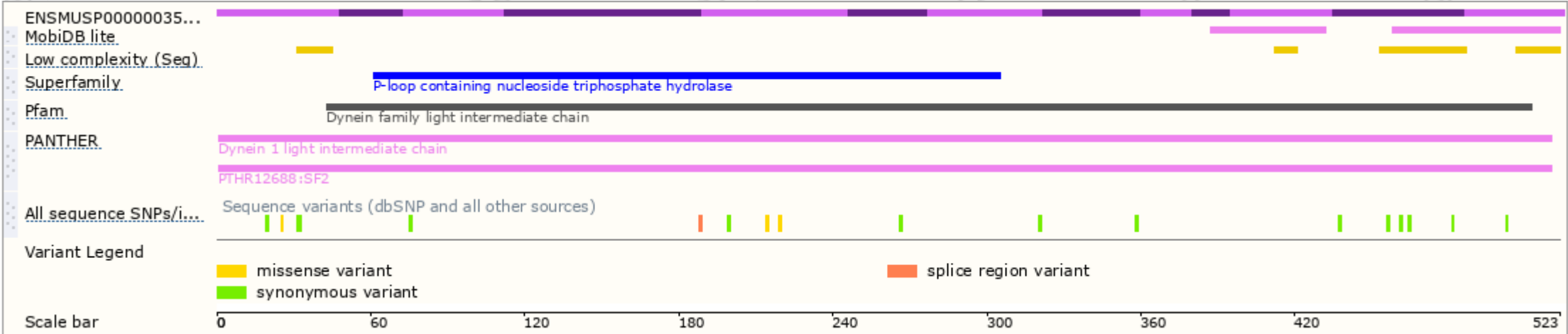
The strategy is based on the design of *Dync1li1*-201 transcript, The transcription is shown below



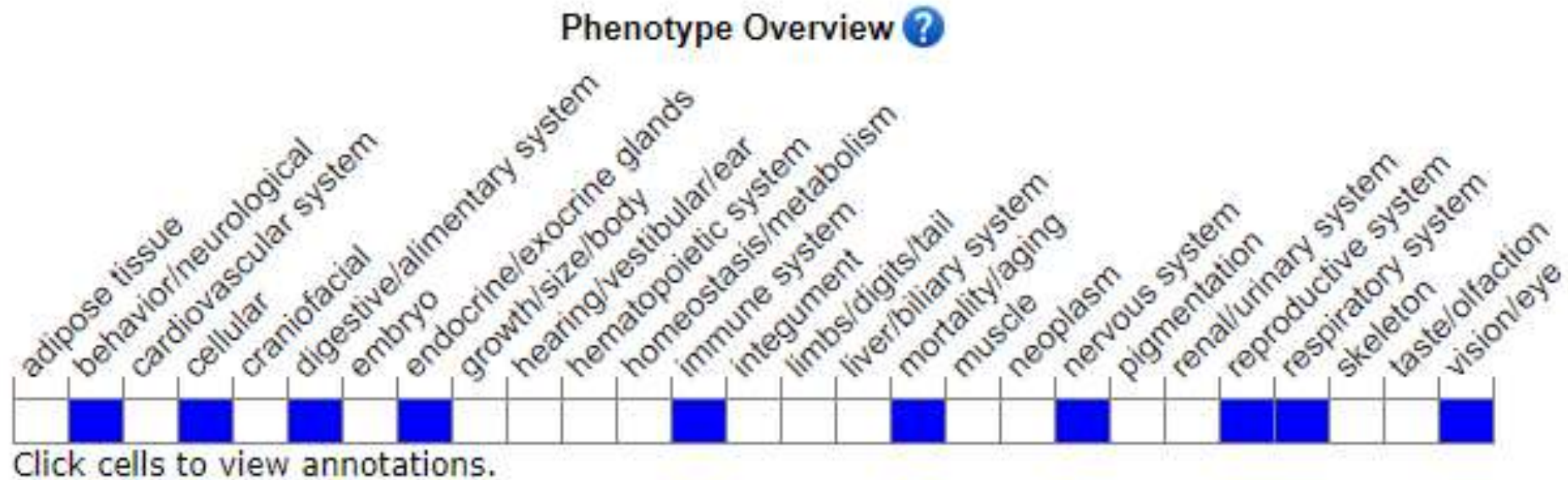
Genomic location distribution



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 an ENU-induced allele exhibit increased anxiety-related response, increased dendrite length, increased neuron migration, and decreased lysosome trafficking.

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