Dnah11 Cas9-CKO *Strategy*

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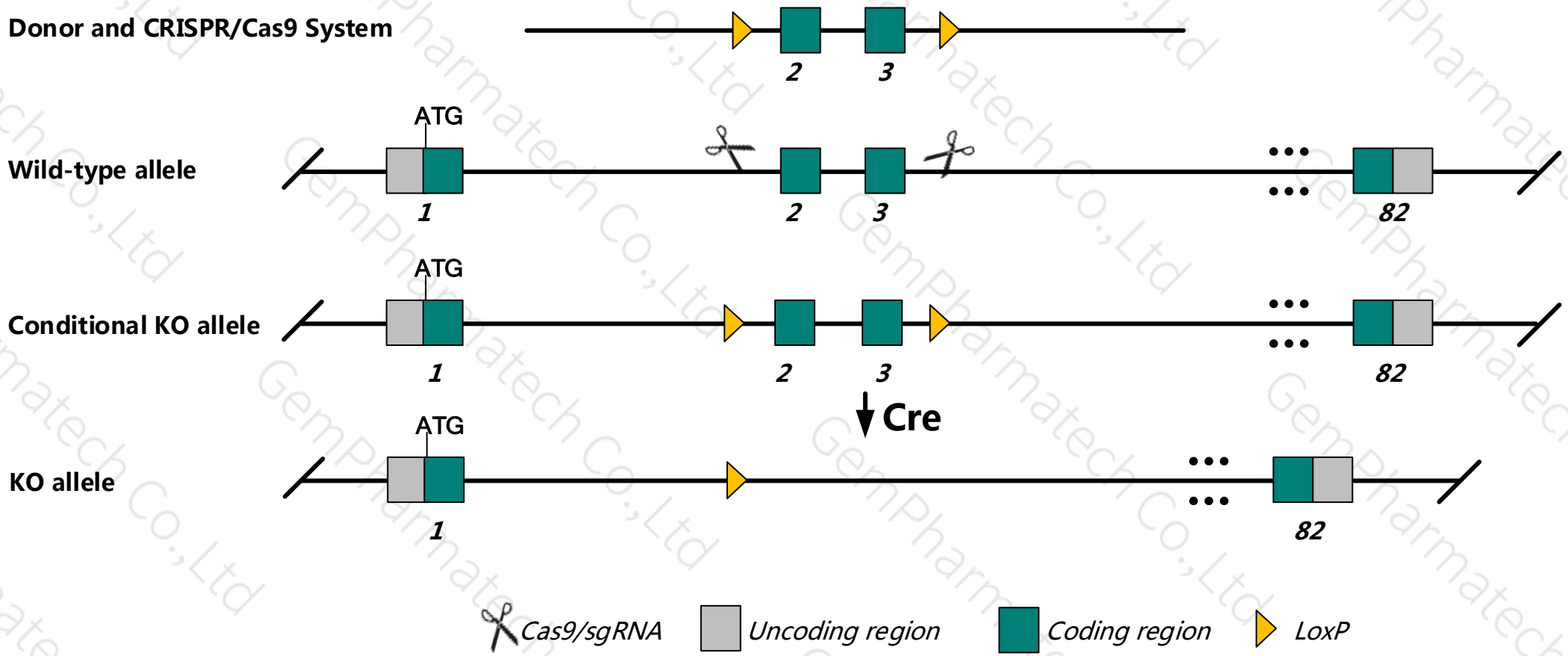
Project Overview

Project Name	***Dnah11***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dnah11* gene. The schematic diagram is as follows:



Technical routes

- The *Dnah11* gene has 4 transcripts.According to the structure of *Dnah11* gene, exon2-exon3 of *Dnah11*-201 (ENSMUST00000084806.6) transcript is recommended as the knockout region.The region contains 341bp coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Dnah11* 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.

Notice

- According to the existing MGI data，Approximately half of live-born homozygous mutants show situs inversus indicating that this gene is no longer properly controlling left-right asymmetry.
- The *Dnah11* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

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Dnah11 dynein, axonemal, heavy chain 11 [*Mus musculus* (house mouse)]

Gene ID: 13411, updated on 21-May-2019

Summary

Official Symbol	Dnah11 provided by MGI
Official Full Name	dynein, axonemal, heavy chain 11 provided by MGI
Primary source	MGI:MGI:1100864
See related	Ensembl:ENSMUSG00000018581
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	iv; lrd; avc4; Dnahc11; b2b598Clo; b2b1203Clo; b2b1279Clo; b2b1289Clo; b2b1727Clo
Expression	Broad expression in frontal lobe adult (RPKM 1.1), cerebellum adult (RPKM 1.0) and 20 other tissues See more
Orthologs	human all

Transcript information（ Ensembl ）

The gene has 4 transcripts, and all transcripts are shown below:

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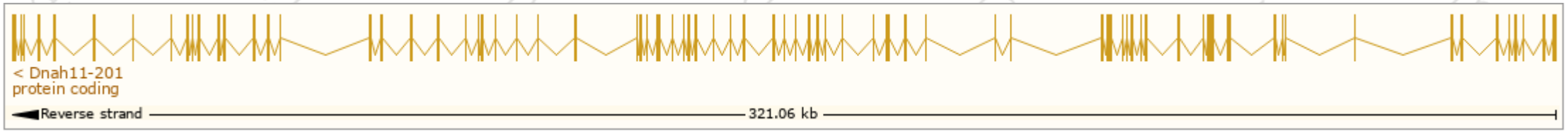
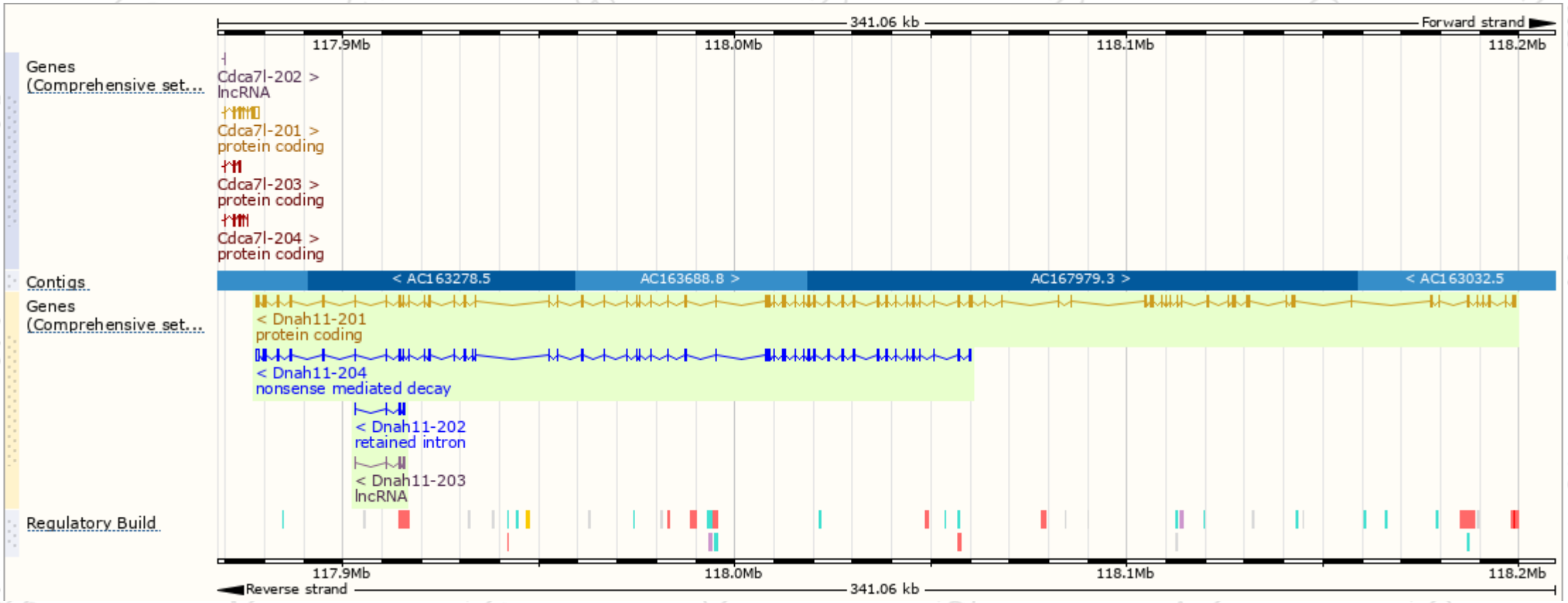
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dnah11-201	ENSMUST00000084806.6	14072	4488aa	Protein coding	CCDS36578	E9Q7N9	TSL:1 GENCODE basic APPRIS P1
Dnah11-204	ENSMUST00000176756.8	8260	1688aa	Nonsense mediated decay	-	H3BLD7	CDS 5' incomplete TSL:5
Dnah11-202	ENSMUST00000175662.7	716	No protein	Retained intron	-	-	TSL:3
Dnah11-203	ENSMUST00000176239.1	680	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Dnah11*-201 transcript,The transcription is shown below

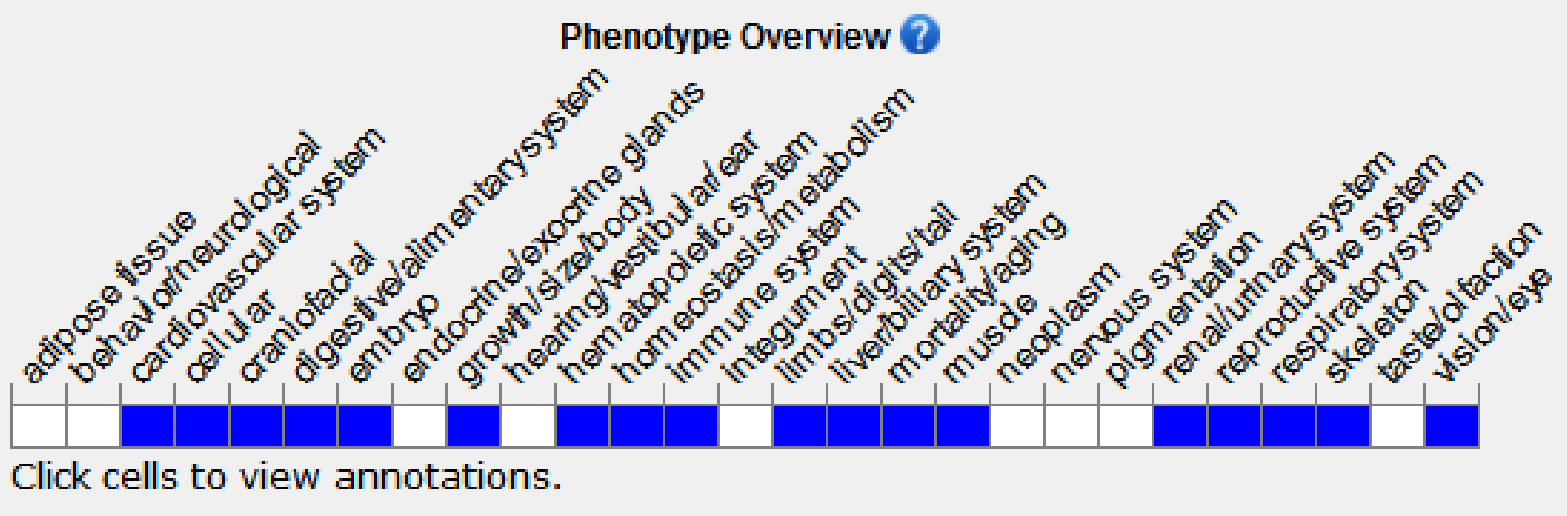


Genomic location distribution



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/) .

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

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