Ddx21 Cas9-CKO Strategy

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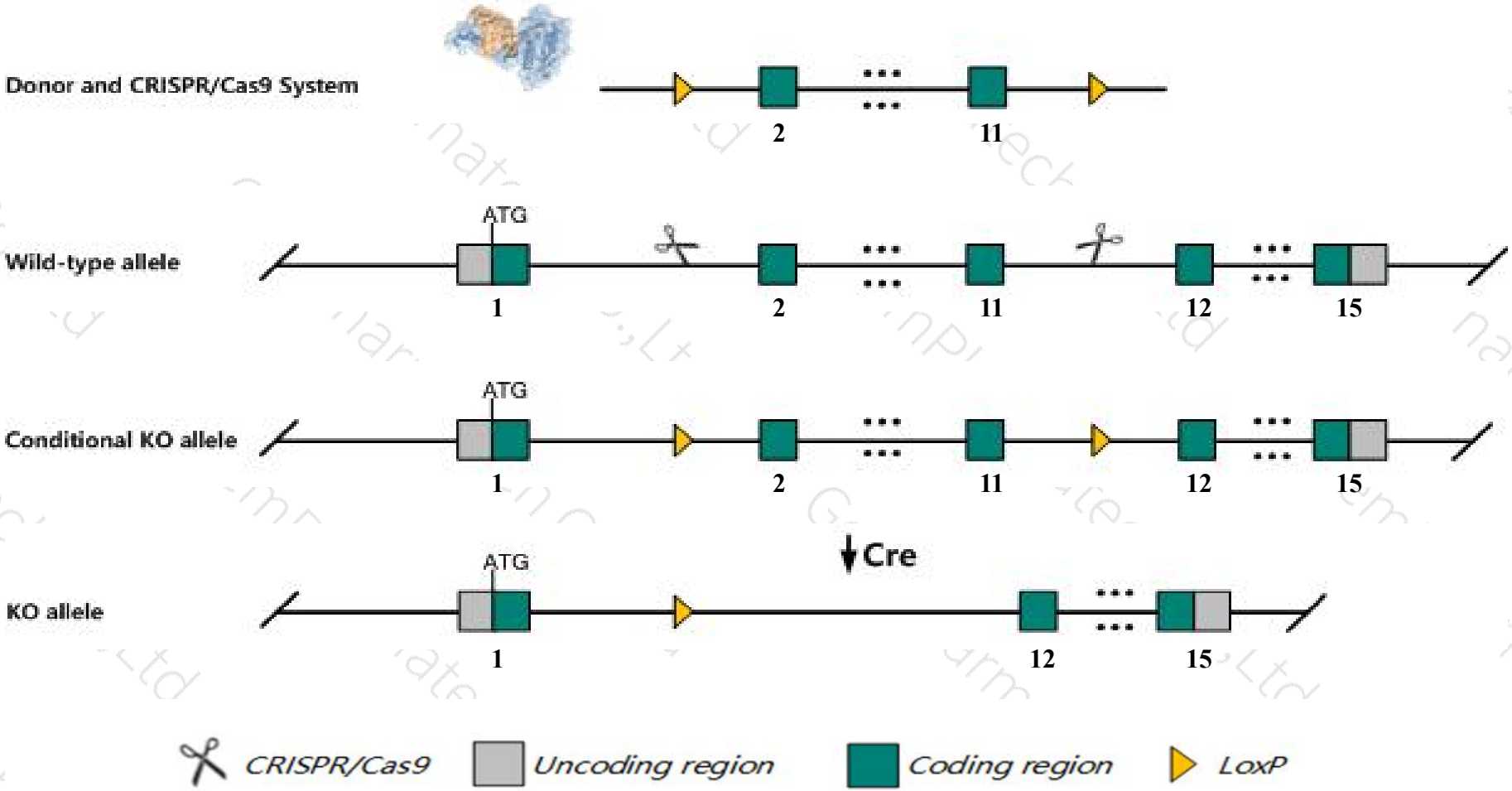
Project Overview

Project Name	***Ddx21***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ddx21* gene. The schematic diagram is as follows:



Technical routes

- The *Ddx21* gene has 3 transcripts. According to the structure of *Ddx21* gene, exon2-exon11 of *Ddx21-201* (ENSMUST00000045866.8) transcript is recommended as the knockout region.The region contains 1871bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ddx21* 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.

Notice

➢ According to the existing MGI data,Mice homozygous for an ENU-induced allele exhibit embryonic lethality.

➢ The flox region is about 3 kb away from the 5th end of the *Gm47257* gene, which may affect the regulation of this gene.

➢ The *Ddx21* gene is located on the Chr10. 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）

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Ddx21 DEAD (Asp-Glu-Ala-Asp) box polypeptide 21 [*Mus musculus* (house mouse)]

Gene ID: 56200, updated on 12-Aug-2019

Summary

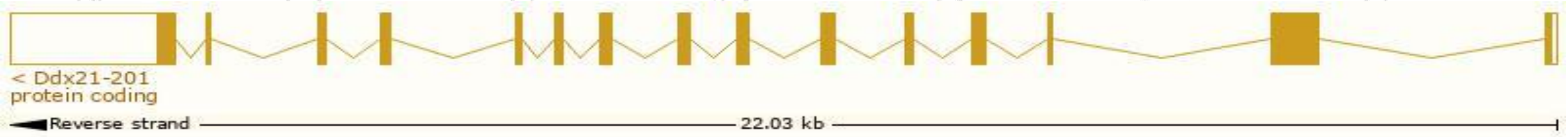
Official Symbol	Ddx21 provided by MGI
Official Full Name	DEAD (Asp-Glu-Ala-Asp) box polypeptide 21 provided by MGI
Primary source	MGI:MGI:1860494
See related	Ensembl:ENSMUSG00000020075
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI255159; AL022742; D10Wsu42e; D10Ertd645e
Expression	Ubiquitous expression in CNS E11.5 (RPKM 23.3), liver E14 (RPKM 22.6) and 25 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

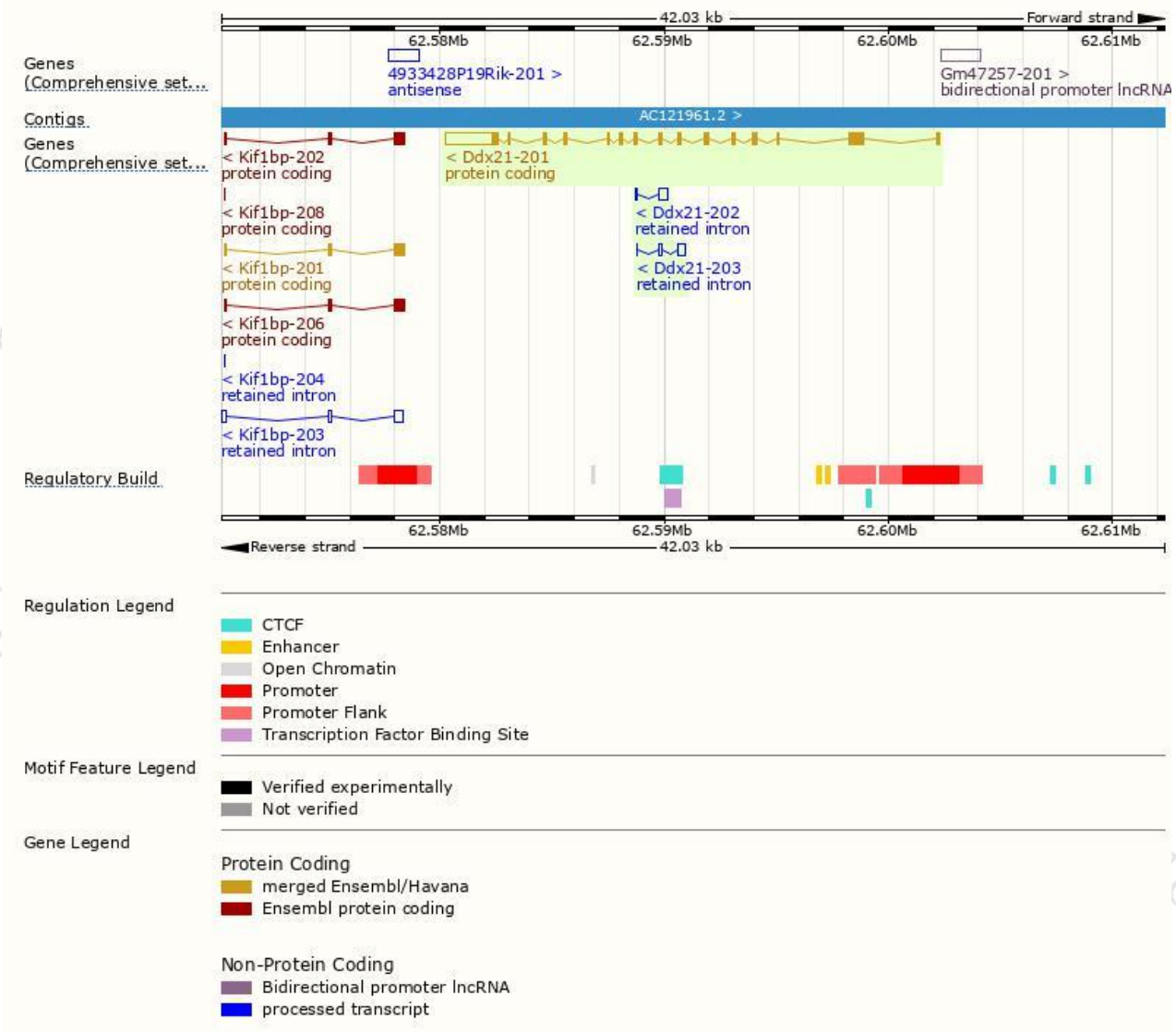
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ddx21-201	ENSMUST00000045866.8	4722	851aa	Protein coding	CCDS23891	Q9JIK5	TSL:1 GENCODE basic APPRIS P1
Ddx21-203	ENSMUST00000220060.1	558	No protein	Retained intron	-	-	TSL:2
Ddx21-202	ENSMUST00000216393.1	480	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Ddx21-201* transcript,The transcription is shown below

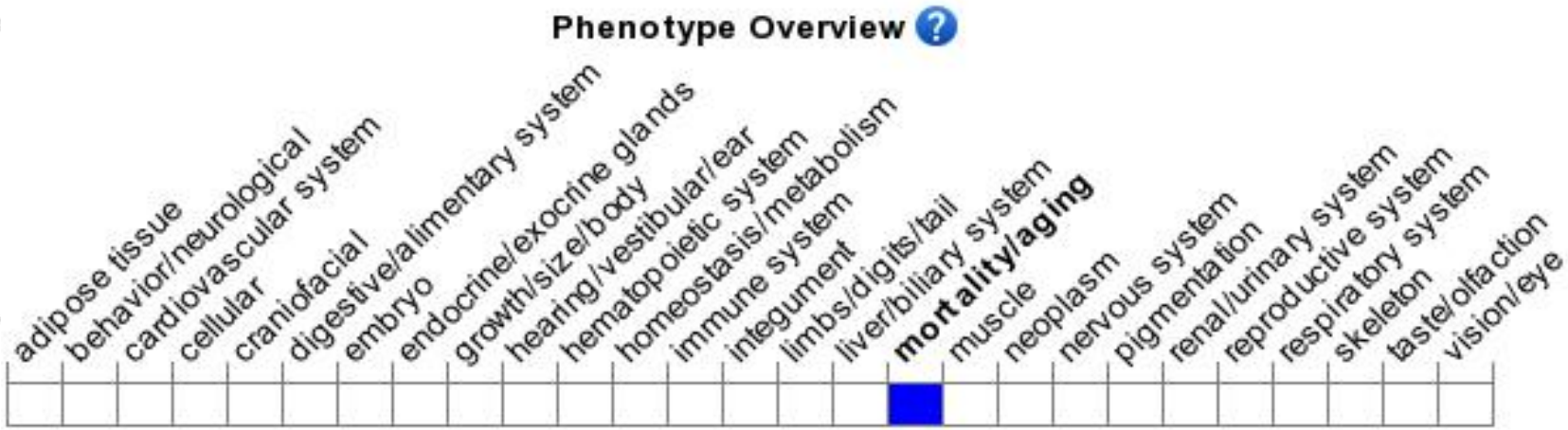


Genomic location distribution



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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