Ddx11 Cas9-CKO Strategy

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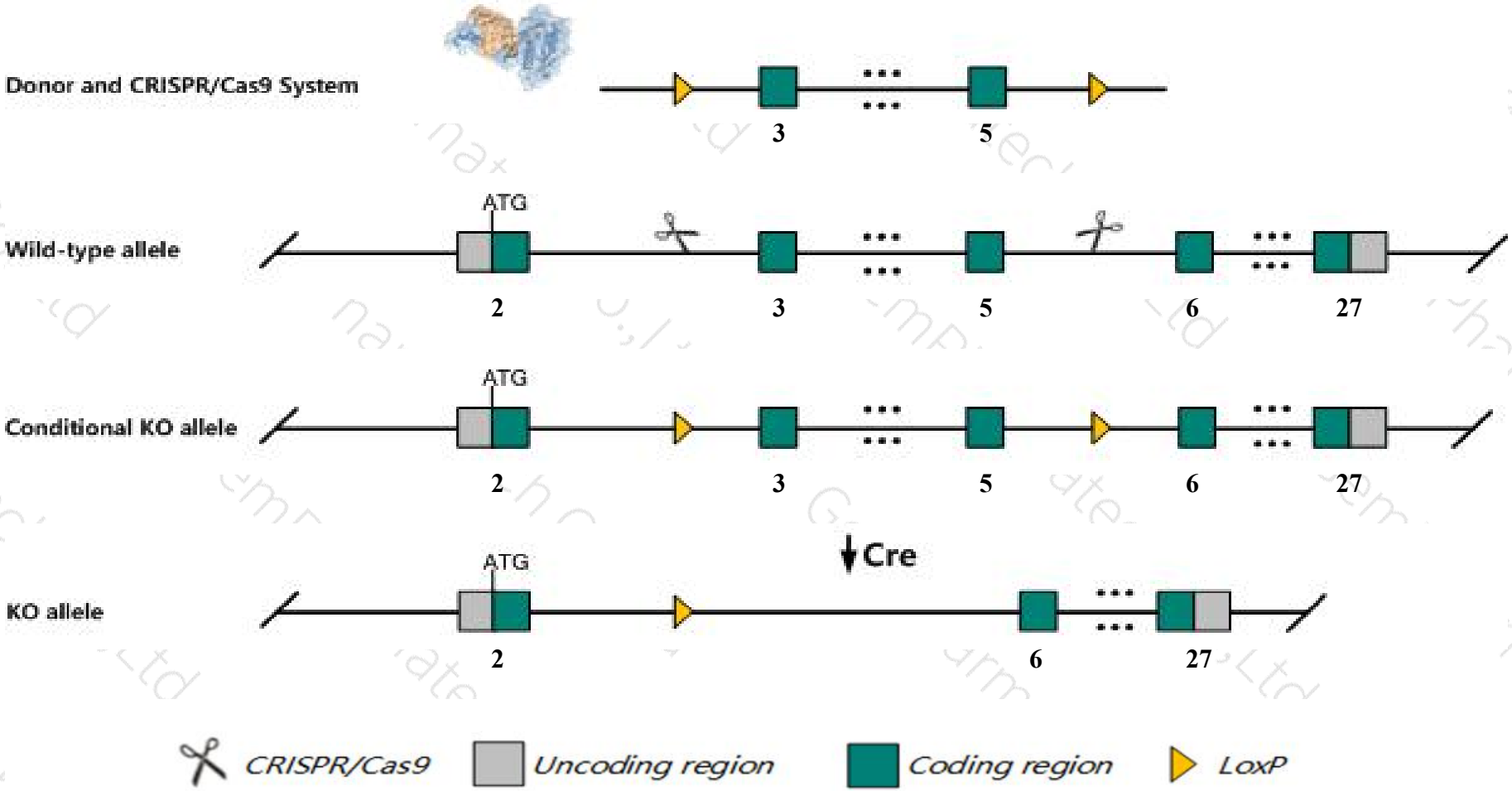
Project Overview

Project Name	***Ddx11***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ddx11* gene. The schematic diagram is as follows:



Technical routes

- The *Ddx11* gene has 9 transcripts. According to the structure of *Ddx11* gene, exon3-exon5 of *Ddx11-201* (ENSMUST00000163605.2) transcript is recommended as the knockout region.The region contains 410bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ddx11* 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 a null allele exhibit lethality before E11.5 with growth retardation, failure of chorioallantoic fusion, poor placental labyrinth development, and embryonic cell physiology.

- The *Ddx11* gene is located on the Chr17. 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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Ddx11 DEAD/H (Asp-Glu-Ala-Asp/His) box helicase 11 [*Mus musculus* (house mouse)]

Gene ID: 320209, updated on 27-Feb-2020

Summary

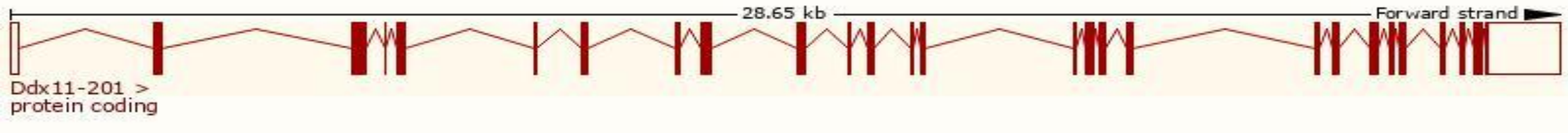
Official Symbol	Ddx11 provided by MGI
Official Full Name	DEAD/H (Asp-Glu-Ala-Asp/His) box helicase 11 provided by MGI
Primary source	MGI:MGI:2443590
See related	Ensembl:ENSMUSG00000035842
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CHL1; KRG2; CHLR1; essa15a; 4732462I11Rik
Expression	Ubiquitous expression in CNS E11.5 (RPKM 7.2), limb E14.5 (RPKM 5.7) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

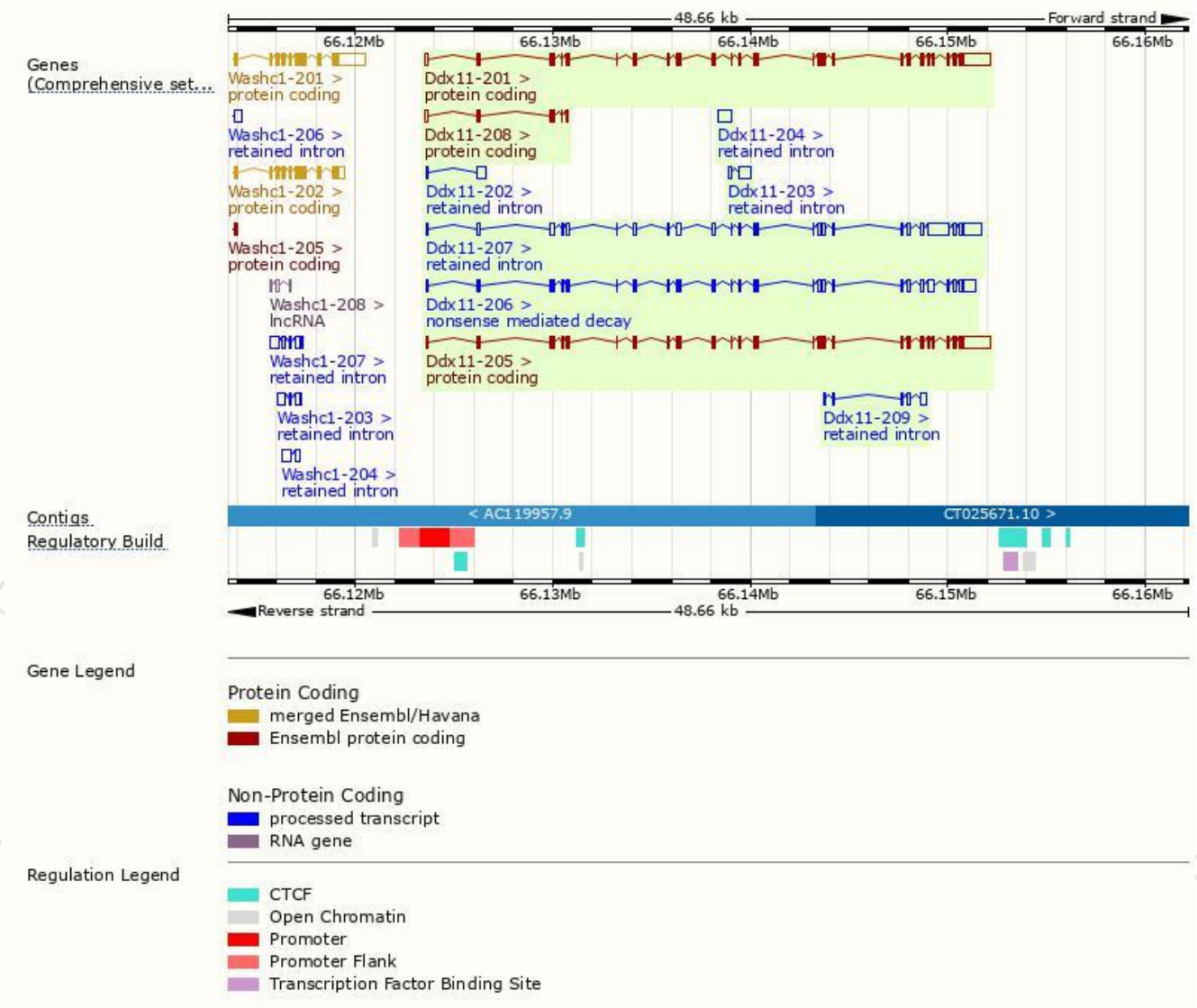
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ddx11-201	ENSMUST00000163605.2	4149	880aa	Protein coding	CCDS28945	A0A2Y9CZM3	TSL:5 GENCODE basic APPRIS P2
Ddx11-205	ENSMUST00000224497.1	4141	906aa	Protein coding	-	Q6AXC6	GENCODE basic APPRIS ALT2
Ddx11-208	ENSMUST00000225956.1	681	168aa	Protein coding	-	A0A286YCB9	CDS 3' incomplete
Ddx11-206	ENSMUST00000224903.1	3520	393aa	Nonsense mediated decay	-	A0A286YDY6	
Ddx11-207	ENSMUST00000225687.1	4480	No protein	Retained intron	-	-	
Ddx11-203	ENSMUST00000223801.1	805	No protein	Retained intron	-	-	
Ddx11-204	ENSMUST00000223805.1	662	No protein	Retained intron	-	-	
Ddx11-209	ENSMUST00000226095.1	618	No protein	Retained intron	-	-	
Ddx11-202	ENSMUST00000223600.1	576	No protein	Retained intron	-	-	

The strategy is based on the design of *Ddx11-201* transcript,The transcription is shown below

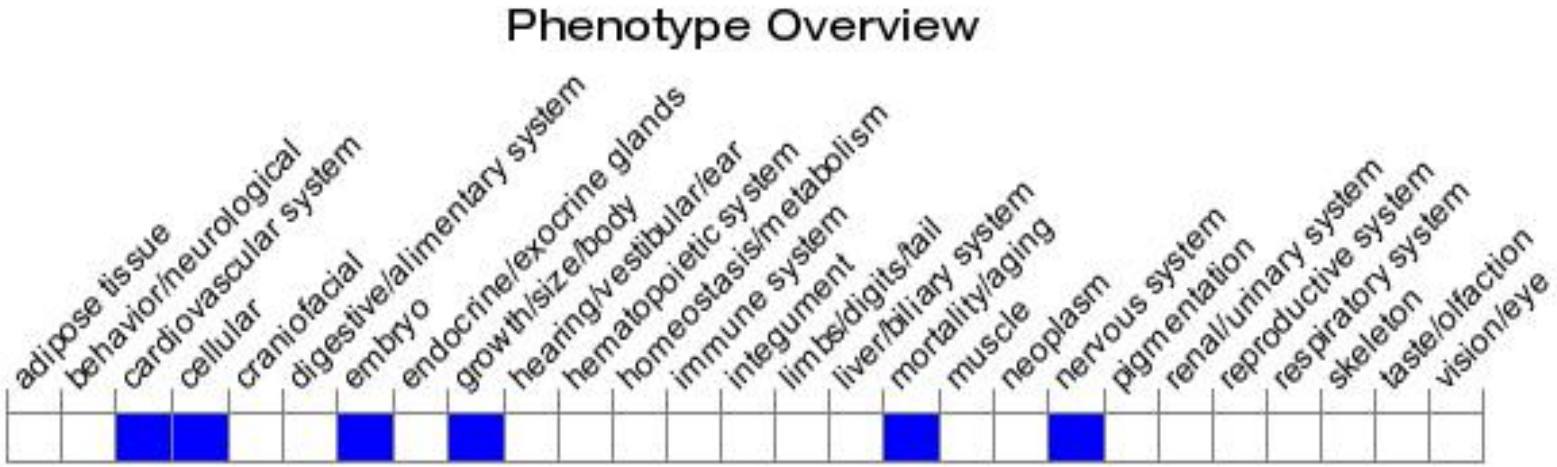


Genomic location distribution



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 null allele exhibit lethality before E11.5 with growth retardation, failure of chorioallantoic fusion, poor placental labyrinth development, and embryonic cell physiology.

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

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