

Dtx2 Cas9-CKO Strategy

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Design Date:

2020-3-30

Project Overview

Project Name

Dtx2

Project type

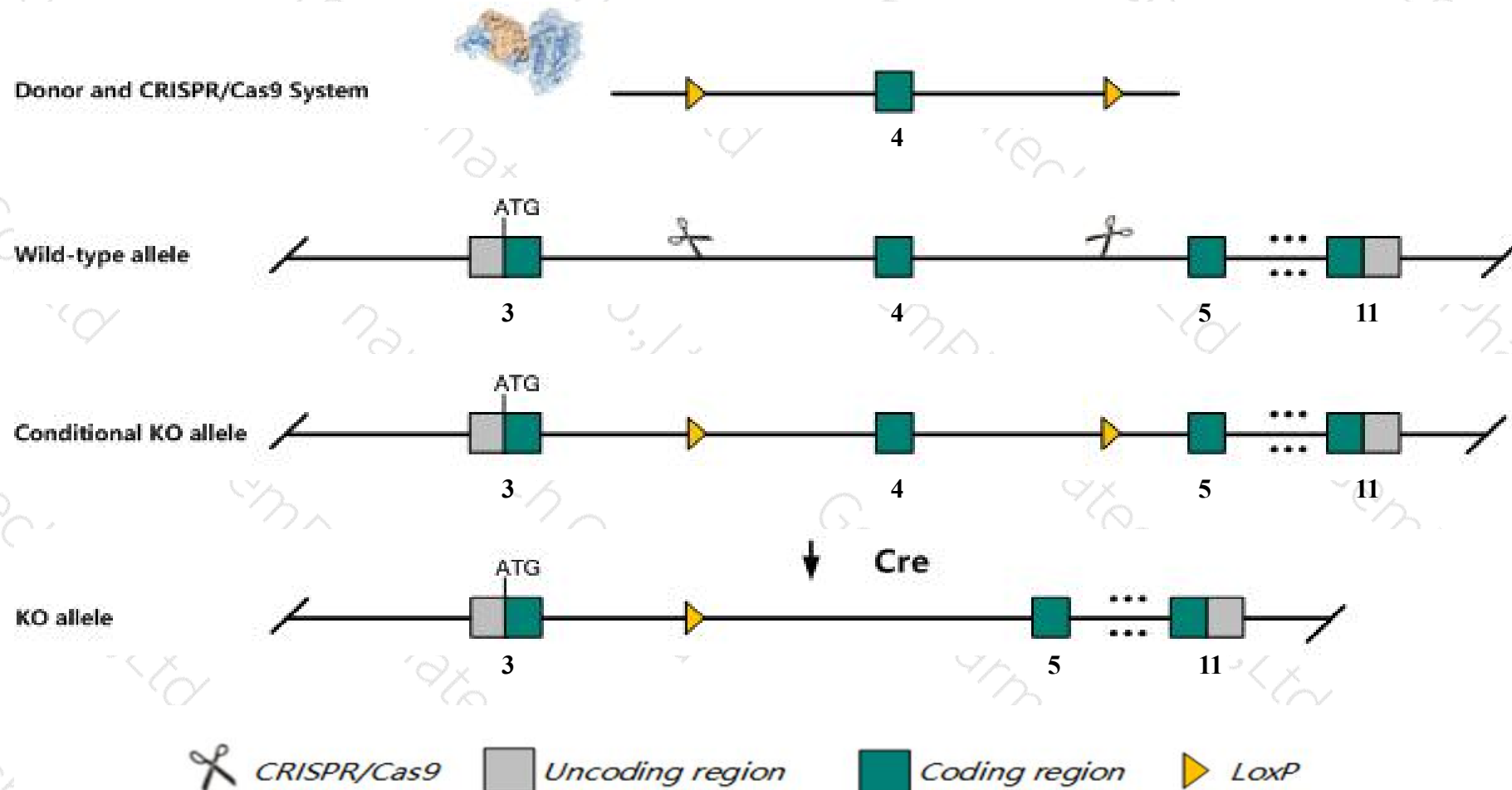
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dtx2* gene. The schematic diagram is as follows:



Technical routes

- The *Dtx2* gene has 9 transcripts. According to the structure of *Dtx2* gene, exon4 of *Dtx2-202* (ENSMUST00000111142.8) transcript is recommended as the knockout region. The region contains 637bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dtx2* 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 knock-out allele are viable and overtly normal with no detectable abnormalities in T or B cell development.
- The *Dtx2* gene is located on the Chr5. 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)

Dtx2 deltex 2, E3 ubiquitin ligase [*Mus musculus* (house mouse)]

Gene ID: 74198, updated on 13-Mar-2020

Summary

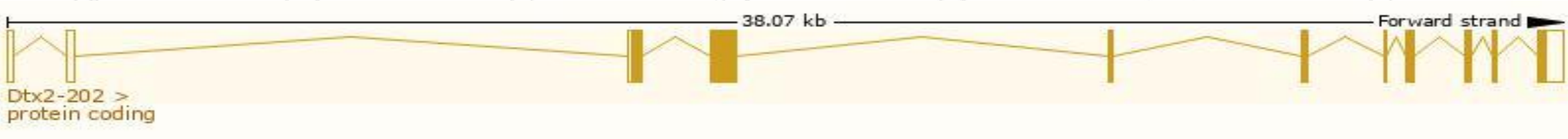
Official Symbol	Dtx2 provided by MGI
Official Full Name	deltex 2, E3 ubiquitin ligase provided by MGI
Primary source	MGI:MGI:1921448
See related	Ensembl:ENSMUSG00000004947
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Deltex2; AA408415; AU022494; 2610524D08Rik
Expression	Ubiquitous expression in ovary adult (RPKM 19.1), thymus adult (RPKM 16.3) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

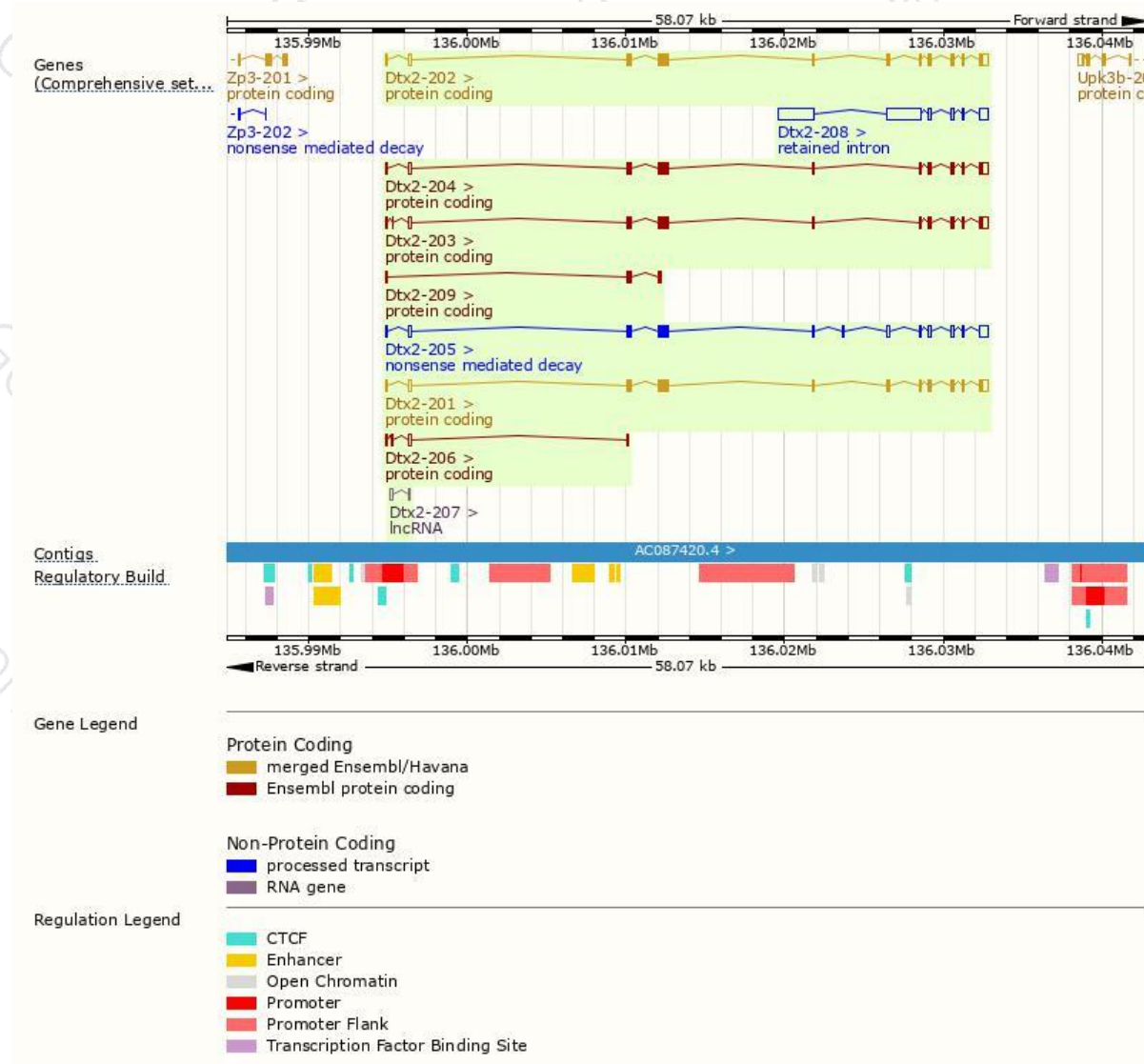
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dtx2-202	ENSMUST00000111142.8	2650	619aa	Protein coding	CCDS57389	Q8R3P2	TSL:1 GENCODE basic APPRIS ALT1
Dtx2-201	ENSMUST00000005072.9	2562	618aa	Protein coding	CCDS39322	A0A0R4IZY1	TSL:1 GENCODE basic APPRIS P3
Dtx2-203	ENSMUST00000111144.7	2545	573aa	Protein coding	CCDS57390	Q8R3P2	TSL:1 GENCODE basic APPRIS ALT1
Dtx2-204	ENSMUST00000111145.9	2493	573aa	Protein coding	CCDS57390	Q8R3P2	TSL:1 GENCODE basic APPRIS ALT1
Dtx2-209	ENSMUST00000199239.4	649	151aa	Protein coding	-	A0A0G2JDR7	CDS 3' incomplete TSL:2
Dtx2-206	ENSMUST00000130345.1	431	8aa	Protein coding	-	A0A1C7ZMZ6	CDS 3' incomplete TSL:3
Dtx2-205	ENSMUST00000125827.7	2661	357aa	Nonsense mediated decay	-	Q8R3P2	TSL:1
Dtx2-207	ENSMUST00000140146.1	336	No protein	Processed transcript	-	-	TSL:3
Dtx2-208	ENSMUST00000142041.1	5420	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Dtx2-202* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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