

Jarid2 Cas9-CKO Strategy

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Reviewer :

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Design Date:

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Project Overview

Project Name

Jarid2

Project type

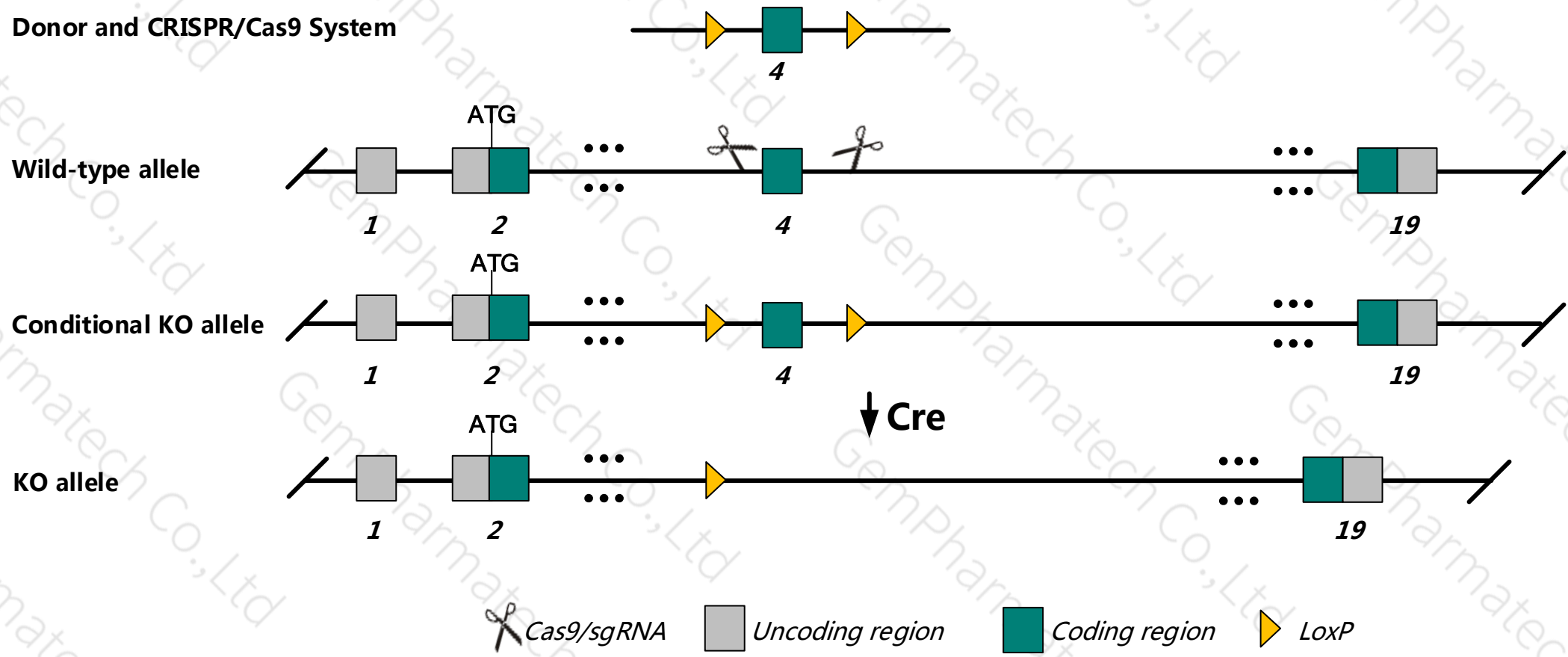
Cas9-CKO

Animal background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Jarid2* gene. The schematic diagram is as follows:



Technical routes

- The *Jarid2* gene has 16 transcripts, According to the structure of *Jarid2* gene, exon4 of *Jarid2-201* transcript is recommended as the knockout region. The region contains the 142bp coding sequence. Knock out the region, result in destruction of protein.
- This project uses CRISPR/Cas9 technology to modify *Jarid2* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed, Cas9, sgRNA and donor were microinjected into fertilized eggs of C57BL/6JGpt mice and homologous recombination was carried out to obtain F0 mice. A stable and hereditary F1 generation mouse model was obtained by mating F0 generation mice with C57BL/6JGpt mice which were confirmed positive by PCR-sequencing.
- 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 and cell types.

- According to the existing MGI data , Homozygous mutants show strain-specific phenotypes, including embryonic death and defective neural tube closure, impaired hematopoiesis and hypoplasia of liver, thymus and spleen. Homozygotes for another mutation die at birth with cardiac defects.
- The *Jarid2*-204 transcript was unaffected and the effect was unknown.
- The *Jarid2* gene is located in the Chr13. If the knockout mice are mixed with other mice, two target genes are avoided on the same chromosome as possible, otherwise the offspring of mice with double gene positive and homozygous gene knockout can not be obtained.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Jarid2 jumonji, AT rich interactive domain 2 [*Mus musculus* (house mouse)]

Gene ID: 16468, updated on 23-Dec-2018

Summary

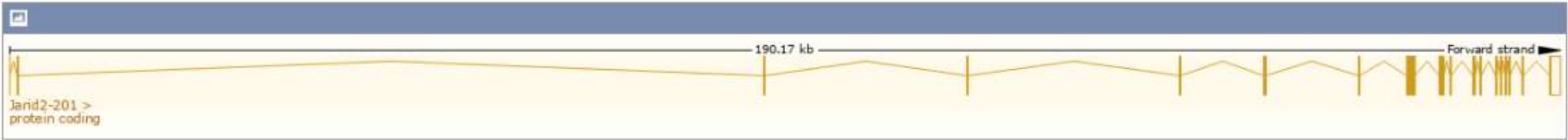
Official Symbol	Jarid2 provided by MGI
Official Full Name	jumonji, AT rich interactive domain 2 provided by MGI
Primary source	MGI:MGI:104813
See related	Ensembl:ENSMUSG00000038518
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Jmj; jumonji
Expression	Ubiquitous expression in CNS E11.5 (RPKM 13.8), CNS E14 (RPKM 9.2) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

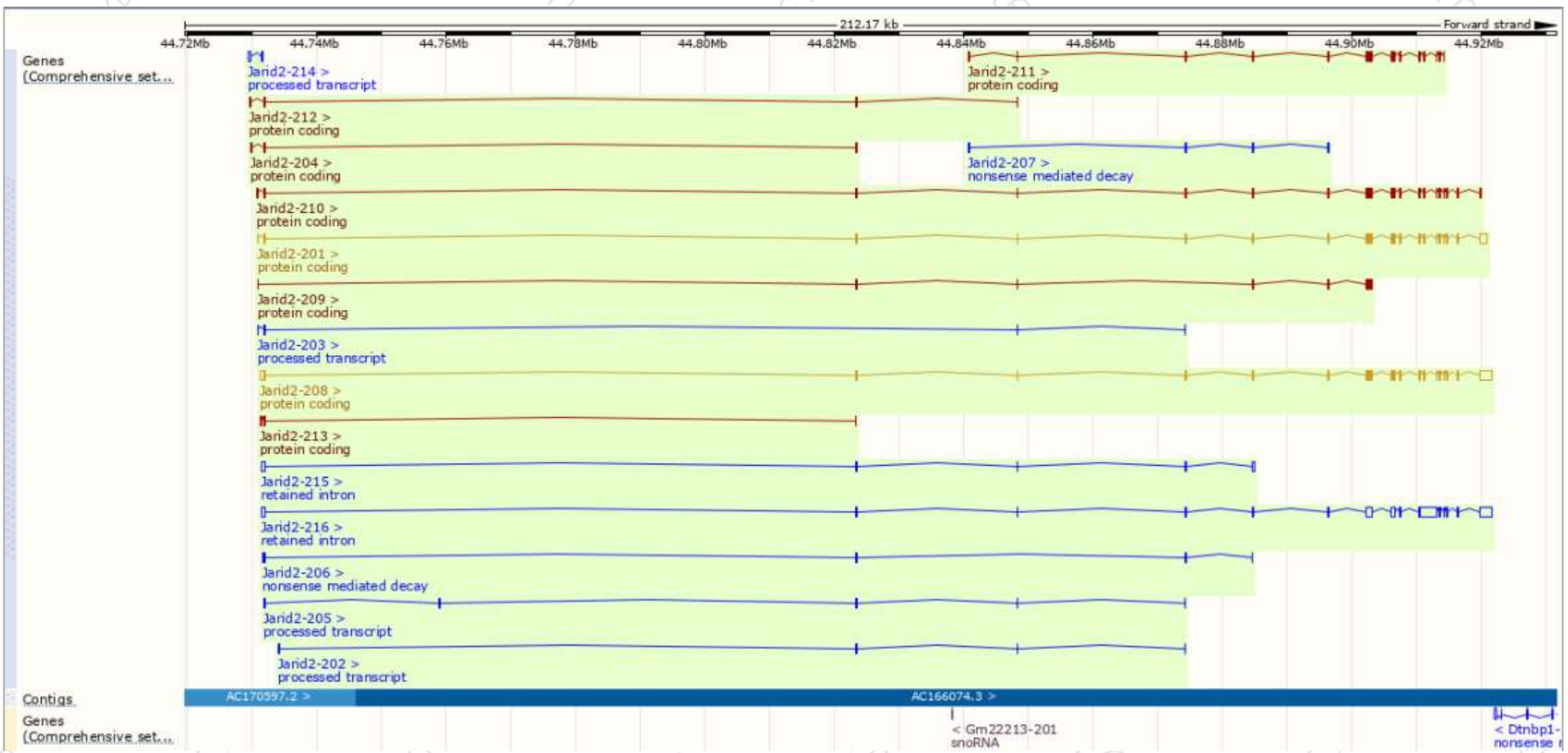
The gene has 16 transcripts, and all transcripts are shown below :

Show/hide columns (1 hidden)								Filter		
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags		
Jarid2-208	ENSMUST00000173246.7	5997	1234aa	Protein coding	CCDS36646	Q62315	NM_001205043 NP_001191972	TSL:1	GENCODE basic	APPRIS P1
Jarid2-201	ENSMUST00000044608.13	5019	1234aa	Protein coding	CCDS36646	Q62315	NM_021878 NP_068678	TSL:1	GENCODE basic	APPRIS P1
Jarid2-210	ENSMUST00000173704.7	4135	1234aa	Protein coding	CCDS36646	Q62315	NM_001205044 NP_001191973	TSL:1	GENCODE basic	APPRIS P1
Jarid2-211	ENSMUST00000173906.2	3212	1029aa	Protein coding	-	G3UZT8	-		CDS 3' incomplete	TSL:1
Jarid2-209	ENSMUST00000173367.7	1775	507aa	Protein coding	-	G3UZW3	-		CDS 3' incomplete	TSL:5
Jarid2-212	ENSMUST00000174068.7	644	80aa	Protein coding	-	G3UZQ8	-		CDS 3' incomplete	TSL:5
Jarid2-204	ENSMUST00000172830.7	476	58aa	Protein coding	-	G3UXE0	-		CDS 3' incomplete	TSL:3
Jarid2-213	ENSMUST00000174086.1	344	23aa	Protein coding	-	G3UXT1	-		CDS 3' incomplete	TSL:5
Jarid2-207	ENSMUST00000173003.1	673	44aa	Nonsense mediated decay	-	G3UZ12	-		TSL:5	
Jarid2-206	ENSMUST00000172977.7	670	82aa	Nonsense mediated decay	-	G3UYY7	-		TSL:5	
Jarid2-205	ENSMUST00000172924.7	566	No protein	Processed transcript	-	-	-		TSL:3	
Jarid2-203	ENSMUST00000172708.7	469	No protein	Processed transcript	-	-	-		TSL:3	
Jarid2-202	ENSMUST00000172581.1	456	No protein	Processed transcript	-	-	-		TSL:3	
Jarid2-214	ENSMUST00000174394.1	428	No protein	Processed transcript	-	-	-		TSL:3	
Jarid2-216	ENSMUST00000174683.7	8353	No protein	Retained intron	-	-	-		TSL:2	
Jarid2-215	ENSMUST00000174557.7	1322	No protein	Retained intron	-	-	-		TSL:1	

The strategy is based on the design of *Jarid2-201* transcript,The transcription is shown below :



Genomic location distribution

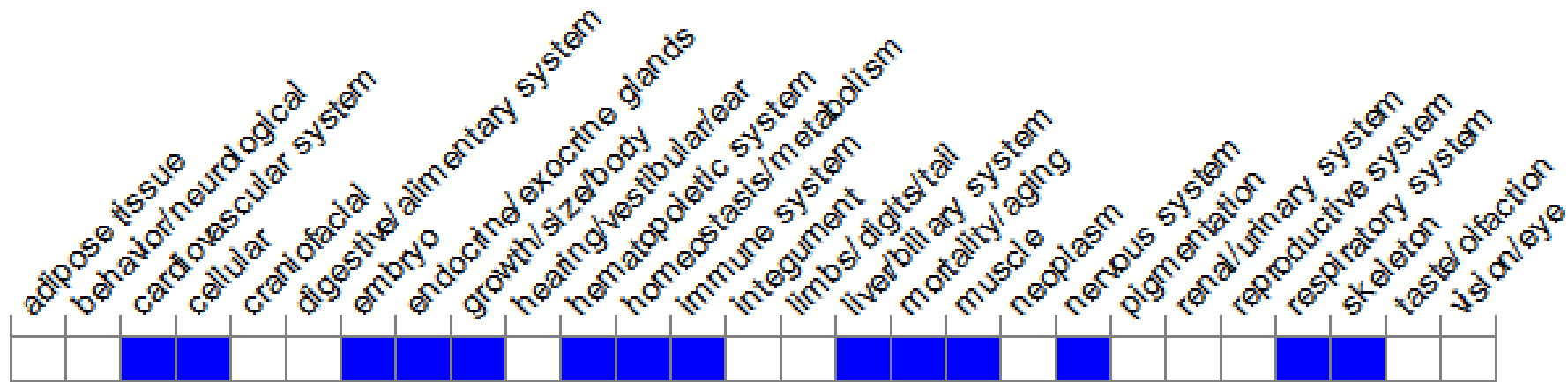


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



Click cells to view annotations.

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, Homozygous mutants show strain-specific phenotypes, including embryonic death and defective neural tube closure, impaired hematopoiesis and hypoplasia of liver, thymus and spleen.

Homozygotes for another mutation die at birth with cardiac defects.

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