Ankrd17 Cas9-KO Strategy

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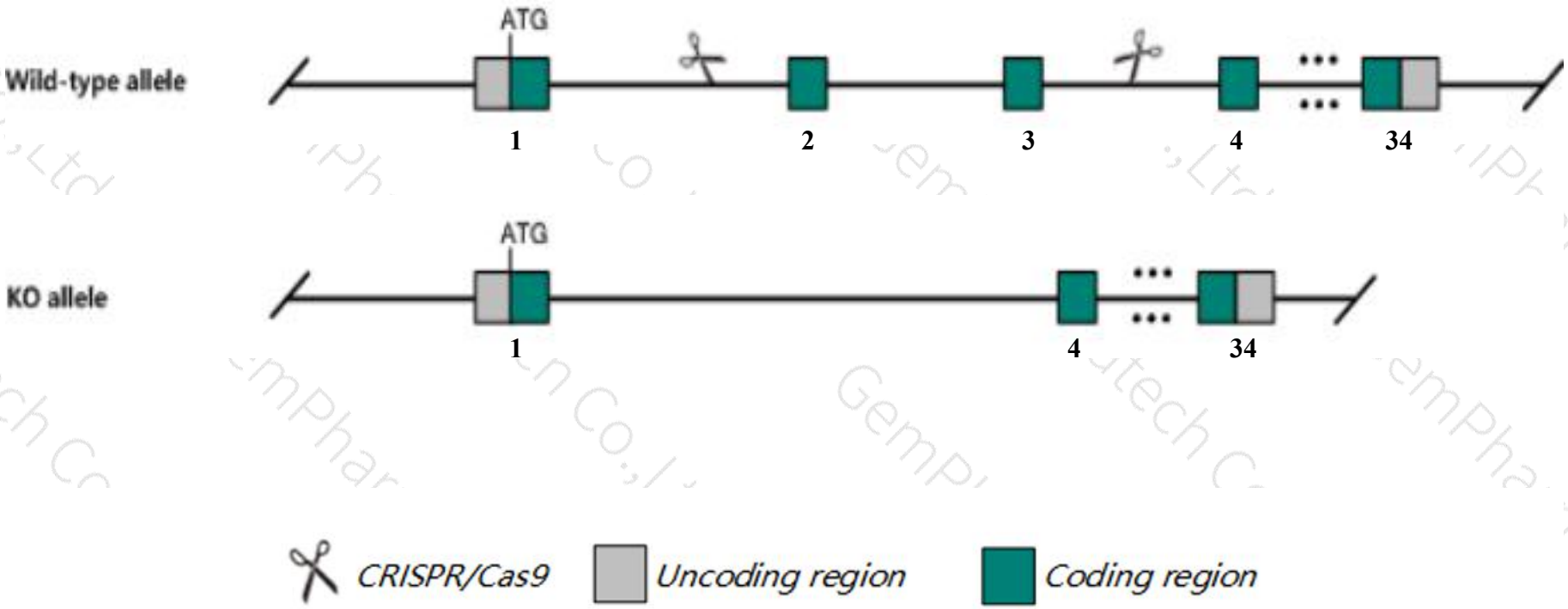
Project Overview

Project Name	***Ankrd17***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ankrd17* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ankrd17* gene has 14 transcripts. According to the structure of *Ankrd17* gene, exon2-exon3 of *Ankrd17-201*(ENSMUST00000014421.14) transcript is recommended as the knockout region.The region contains 311bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ankrd17* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ According to the existing MGI data,mice homozygous for a null mutation display embryonic lethality during organogenesis with hemorrhages, impaired vascular smooth muscle cell development, impaired vascular integrity, and growth retardation.

➢ The *Ankrd17* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

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Ankrd17 ankyrin repeat domain 17 [*Mus musculus* (house mouse)]

Gene ID: 81702, updated on 26-Jun-2020

Summary

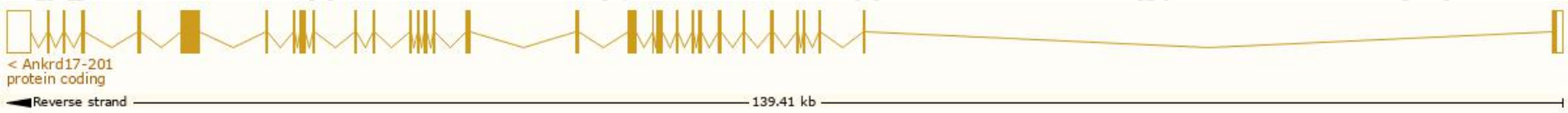
Official Symbol	Ankrd17 provided by MGI
Official Full Name	ankyrin repeat domain 17 provided by MGI
Primary source	MGI:MGI:1932101
See related	Ensembl:ENSMUSG00000055204
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Foe; Gtar; Mask; AA407558; AA516750; AU040470; mKIAA0697; A930008M01; 4933425K22Rik; A130069E23Rik
Summary	This gene encodes a protein with ankyrin repeats, which are associated with protein-protein interactions. Studies suggest that this protein is involved in liver development. Two transcript variants encoding different isoforms have been found for this gene. [provided by RefSeq, Jul 2008]
Expression	Ubiquitous expression in placenta adult (RPKM 15.9), whole brain E14.5 (RPKM 11.2) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

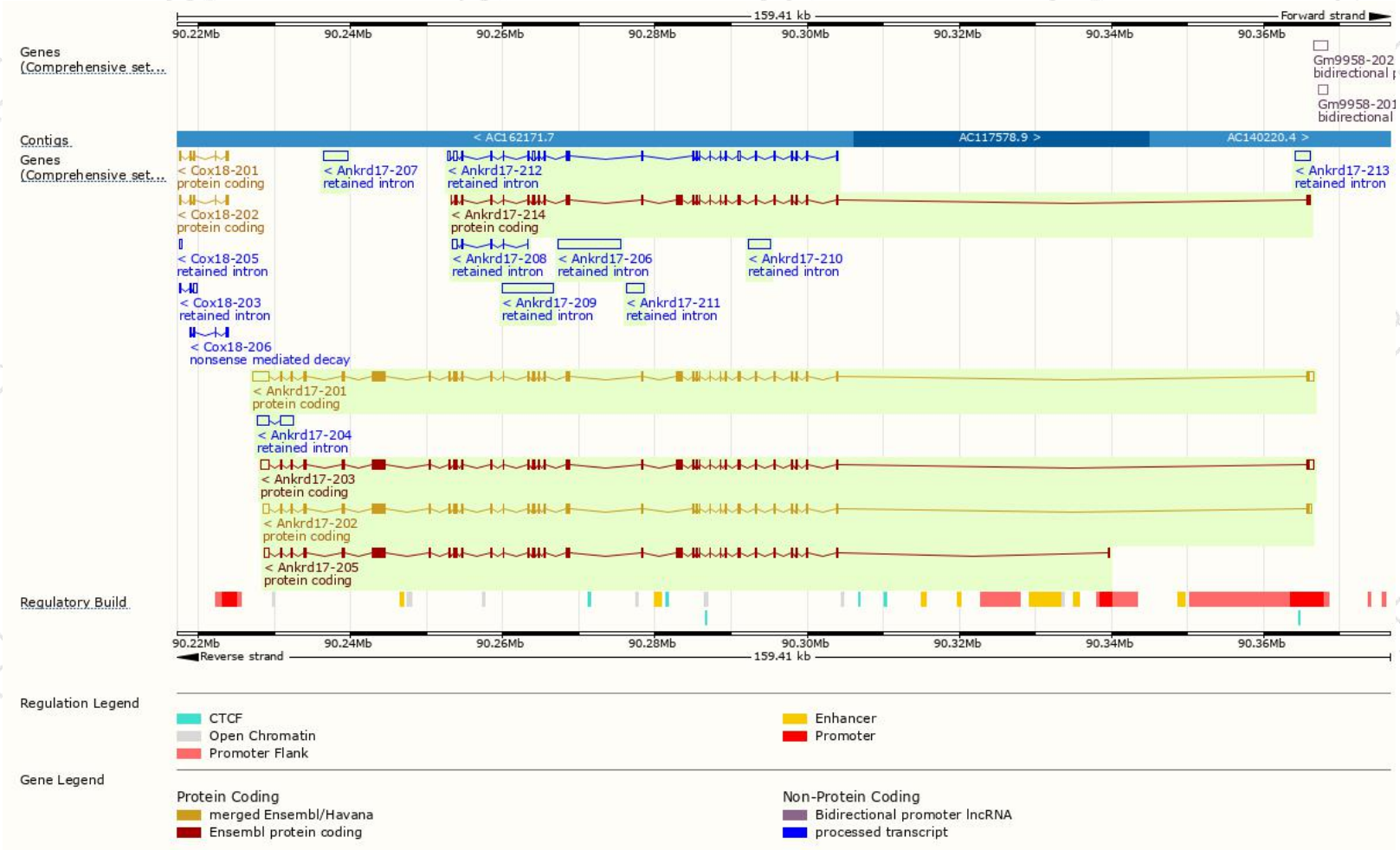
The gene has 14 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein ▲	Biotype	CCDS	UniProt	Flags
Ankrd17-214	ENSMUST00000218526.1	4938	1600aa	Protein coding	-	A0A1W2P6X1	TSL:5 GENCODE basic
Ankrd17-202	ENSMUST00000081914.12	8057	2352aa	Protein coding	CCDS57353	E9QKG6	TSL:5 GENCODE basic APPRIS ALT2
Ankrd17-205	ENSMUST00000197021.1	8067	2494aa	Protein coding	-	A0A0G2JDZ9	TSL:5 GENCODE basic APPRIS ALT2
Ankrd17-203	ENSMUST00000168058.6	9311	2602aa	Protein coding	-	E9Q804	TSL:5 GENCODE basic APPRIS ALT2
Ankrd17-201	ENSMUST00000014421.14	10458	2603aa	Protein coding	CCDS57354	Q99NH0	TSL:5 GENCODE basic APPRIS P4
Ankrd17-206	ENSMUST00000197037.1	8281	No protein	Retained intron	-	-	TSL:NA
Ankrd17-209	ENSMUST00000199424.1	6689	No protein	Retained intron	-	-	TSL:NA
Ankrd17-212	ENSMUST00000200012.4	4225	No protein	Retained intron	-	-	TSL:1
Ankrd17-207	ENSMUST00000197327.1	3275	No protein	Retained intron	-	-	TSL:NA
Ankrd17-204	ENSMUST00000196919.1	3182	No protein	Retained intron	-	-	TSL:1
Ankrd17-210	ENSMUST00000199905.1	2842	No protein	Retained intron	-	-	TSL:NA
Ankrd17-211	ENSMUST00000199965.1	2178	No protein	Retained intron	-	-	TSL:NA
Ankrd17-213	ENSMUST00000202226.1	2091	No protein	Retained intron	-	-	TSL:NA
Ankrd17-208	ENSMUST00000199096.1	1037	No protein	Retained intron	-	-	TSL:1

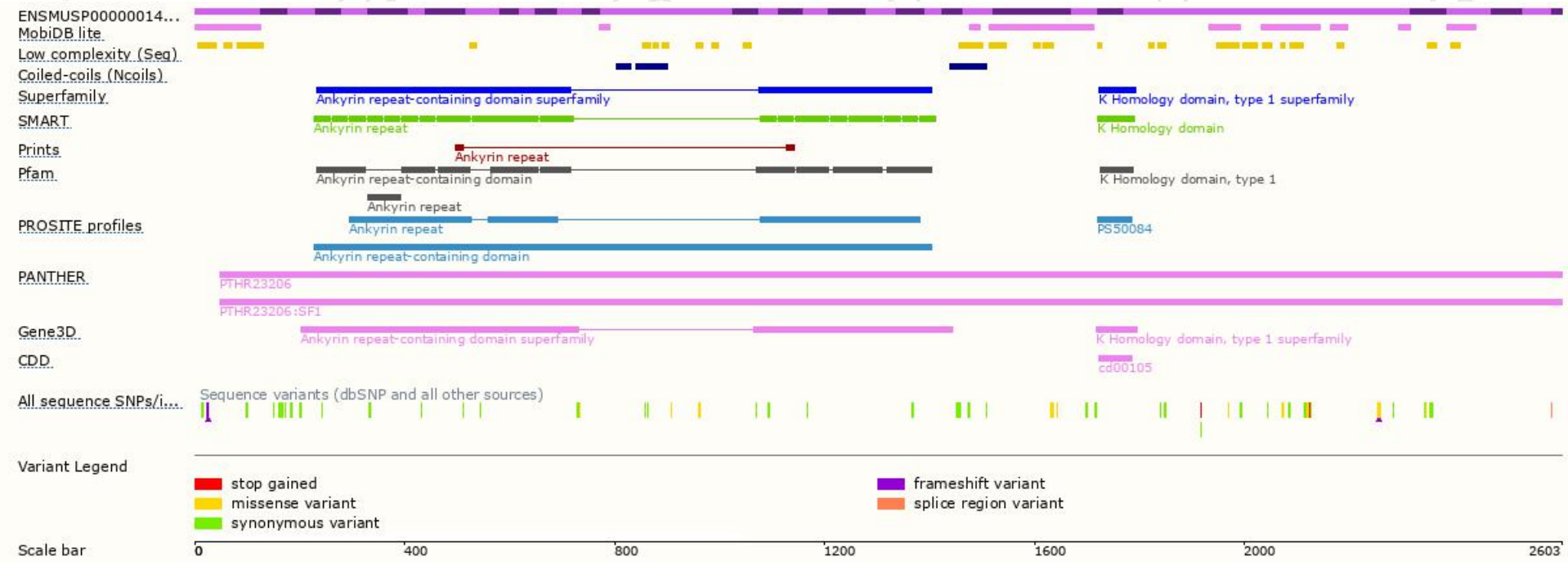
The strategy is based on the design of *Ankrd17-201* transcript,the transcription is shown below:



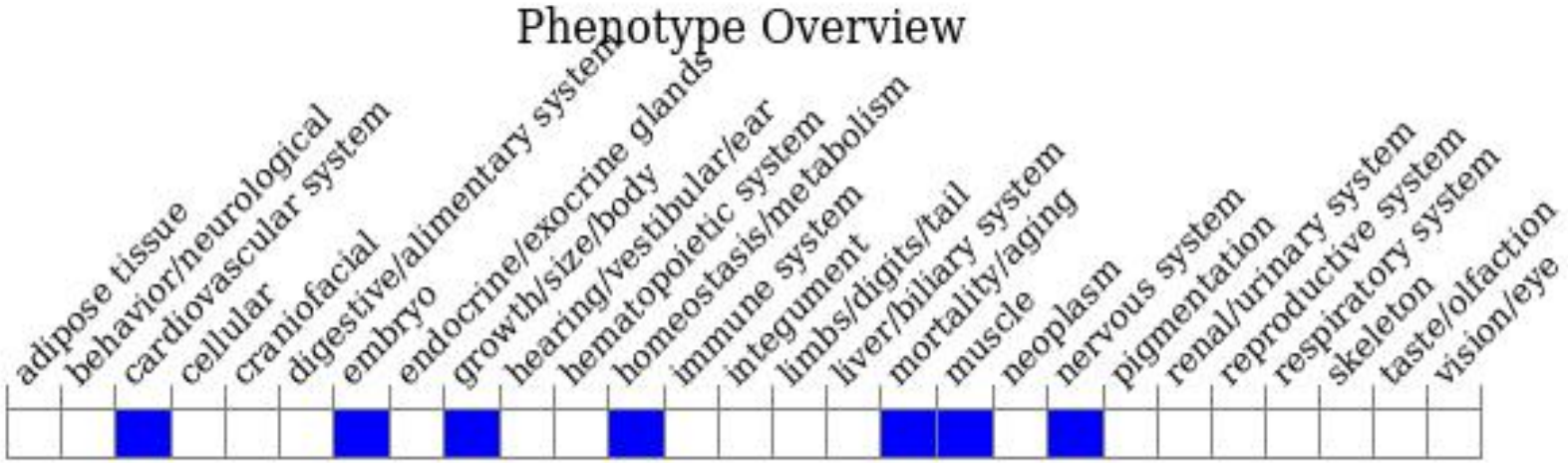
Genomic location distribution



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 mutation display embryonic lethality during organogenesis with hemorrhages, impaired vascular smooth muscle cell development, impaired vascular integrity, and growth retardation.

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

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