Armc4 Cas9-KO Strategy

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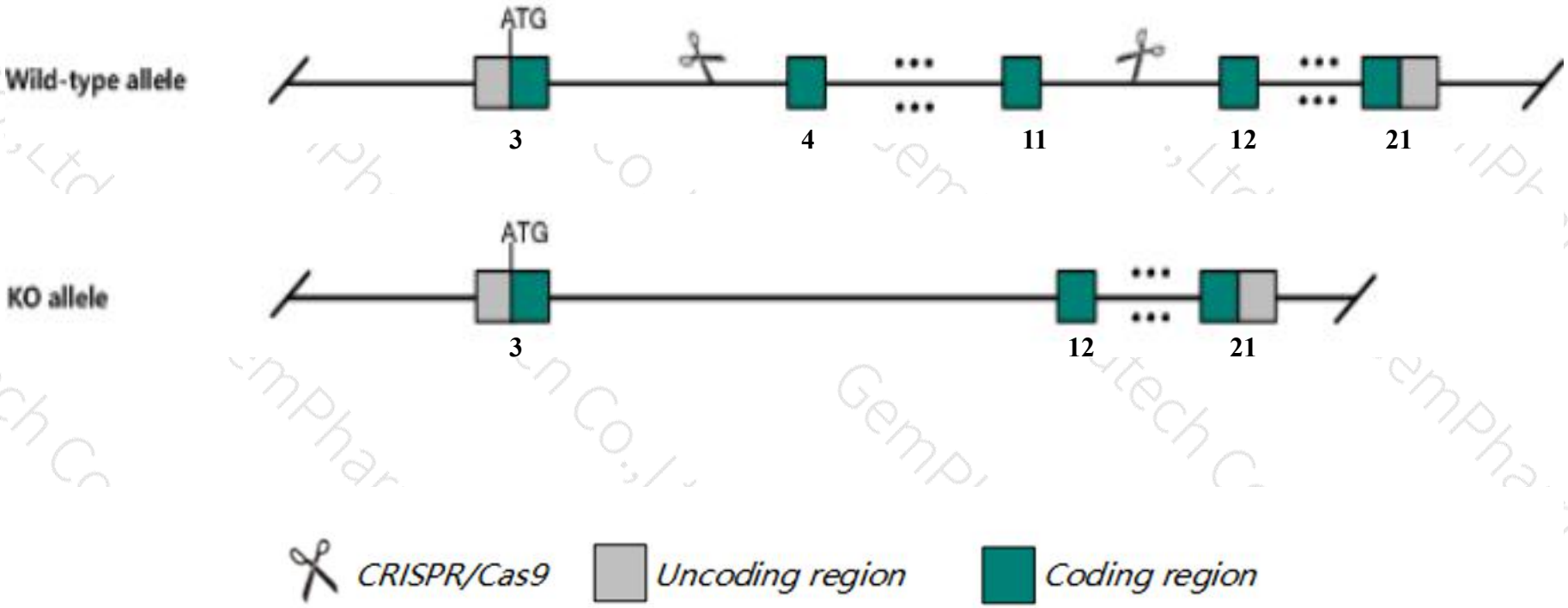
Project Overview

Project Name	***Armc4***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Armc4* gene. The schematic diagram is as follows:



Technical routes

➢ The *Armc4* gene has 6 transcripts. According to the structure of *Armc4* gene, exon4-exon11 of *Armc4-205*(ENSMUST00000234788.1) transcript is recommended as the knockout region.The region contains 1141bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Armc4* 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 ENU-induced mutations exhibit situs inversus totalis or heterotaxia with congenital heart disease including double outlet right ventricle and ventricular septal defects. Dyskinetic, slow, or immotile airway cilia are also observed.

➢ The *Armc4* gene is located on the Chr18. 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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Armc4 armadillo repeat containing 4 [Mus musculus (house mouse)]

Gene ID: 74934, updated on 13-Mar-2020

Summary

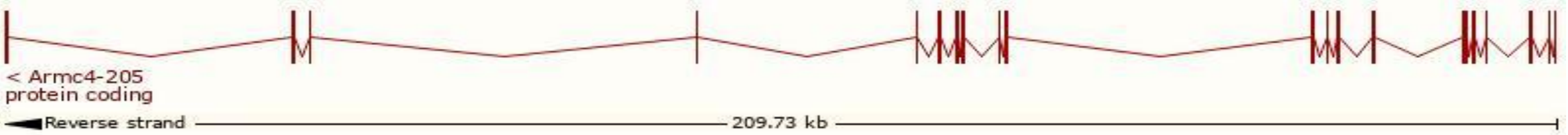
Official Symbol	Armc4 provided by MGI
Official Full Name	armadillo repeat containing 4 provided by MGI
Primary source	MGI:MGI:1922184
See related	Ensembl:ENSMUSG00000061802
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930463I21Rik, b2b227.1Clo, b2b643Clo
Expression	Biased expression in testis adult (RPKM 5.0) and ovary adult (RPKM 0.3) See more
Orthologs	human all

Transcript information（Ensembl）

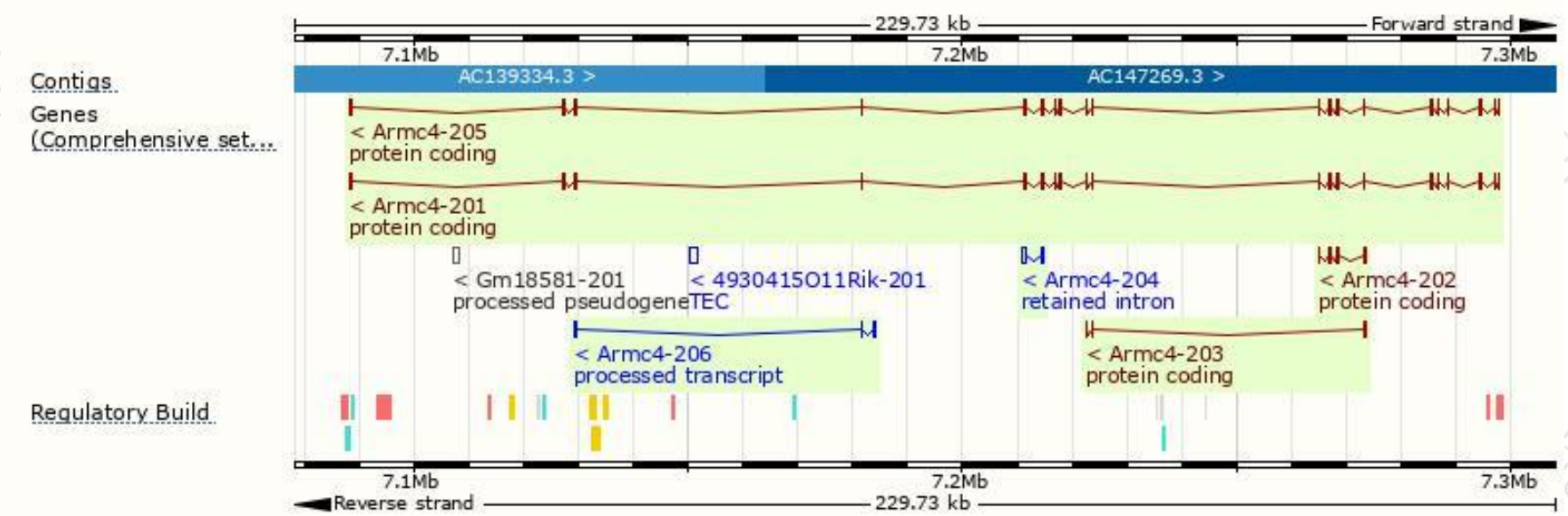
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Armc4-205	ENSMUST00000234788.1	3508	1037aa	Protein coding	CCDS37729	B2RY50	GENCODE basic APPRIS P1
Armc4-201	ENSMUST00000081275.4	3477	1037aa	Protein coding	CCDS37729	B2RY50	TSL:5 GENCODE basic APPRIS P1
Armc4-202	ENSMUST00000234196.1	582	149aa	Protein coding	-	A0A3Q4L350	CDS 3' incomplete
Armc4-203	ENSMUST00000234281.1	412	92aa	Protein coding	-	A0A3Q4EHU7	CDS 3' incomplete
Armc4-206	ENSMUST00000235068.1	408	No protein	Processed transcript	-	-	
Armc4-204	ENSMUST00000234458.1	751	No protein	Retained intron	-	-	

The strategy is based on the design of *Armc4-205* transcript,the transcription is shown below:



Genomic location distribution



Regulation Legend

- CTCF
- Enhancer
- Open Chromatin
- Promoter
- Promoter Flank

Gene Legend

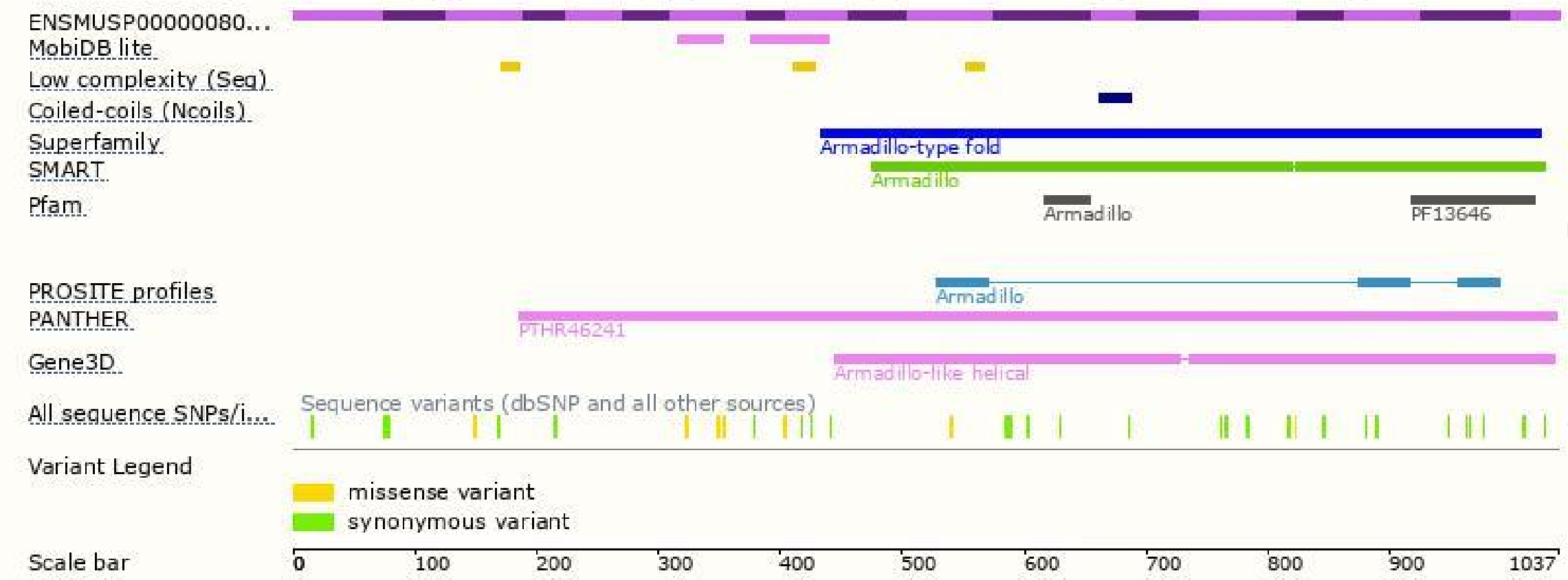
Protein Coding

- Ensembl protein coding

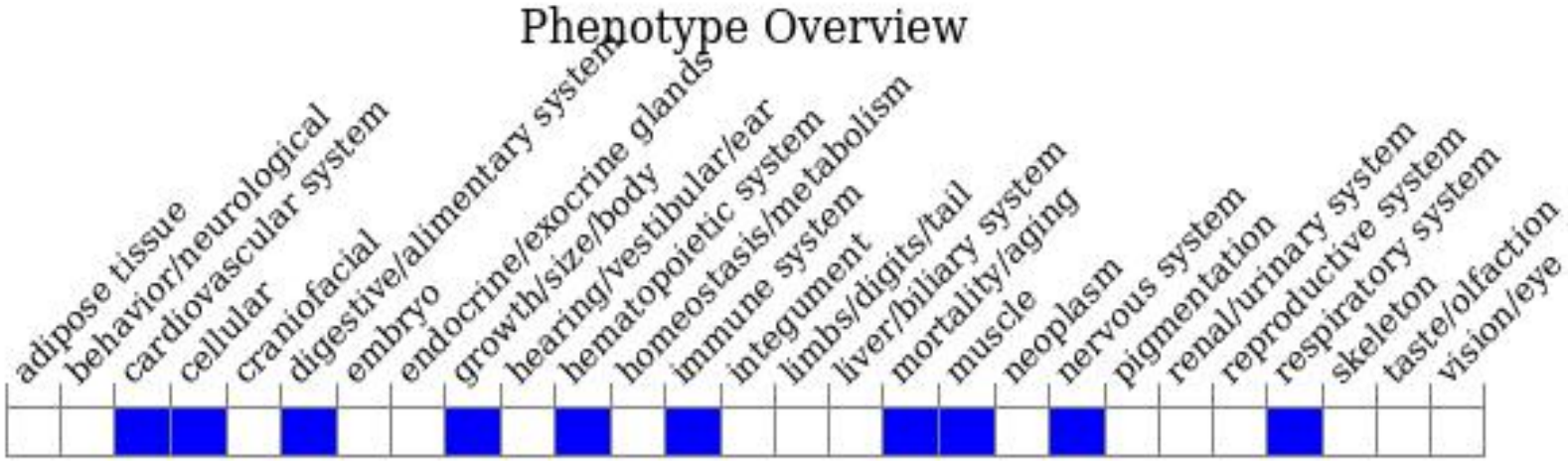
Non-Protein Coding

- processed transcript
- pseudogene

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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