Aim2 Cas9-CKO Strategy

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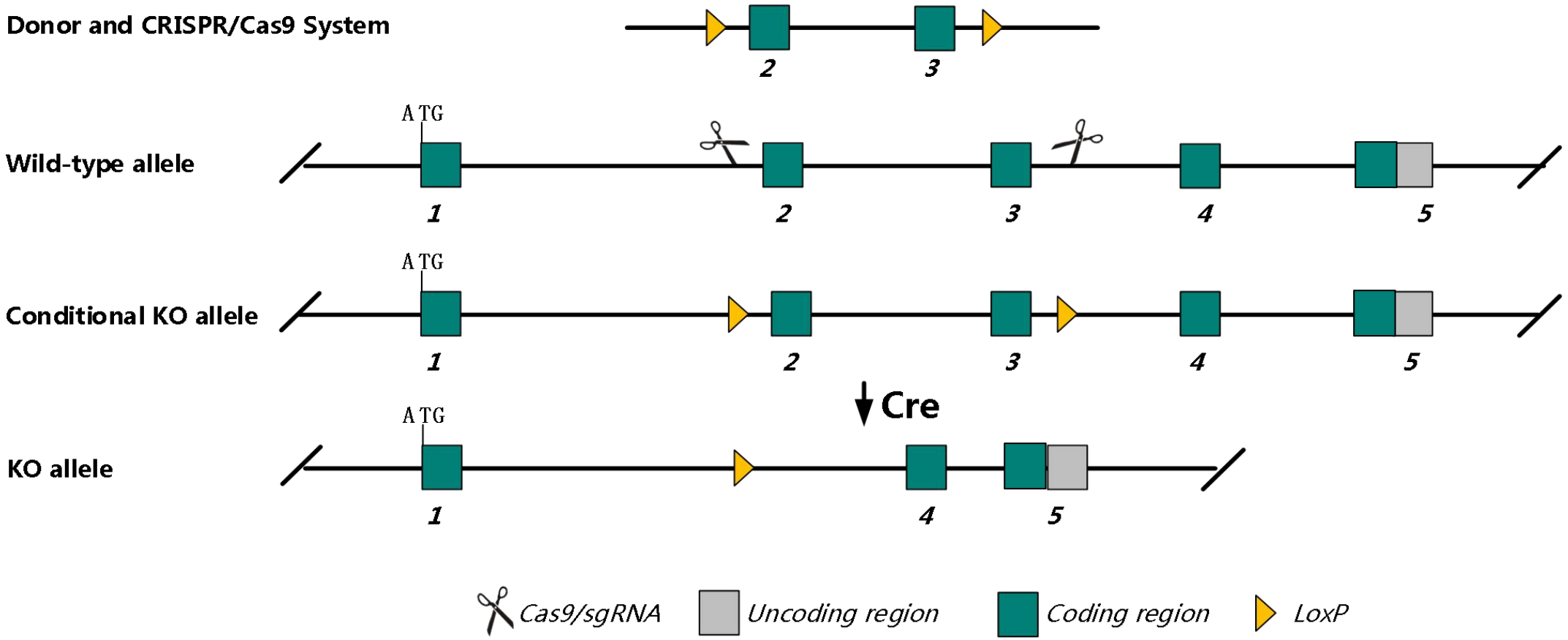
Project Overview

Project Name	***Aim2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Aim2* gene. The schematic diagram is as follows:



Technical routes

- The *Aim2* gene has 7 transcripts. According to the structure of *Aim2* gene, exon2-exon3 of *Aim2-204* (ENSMUST00000166137.2) transcript is recommended as the knockout region.The region contains 566bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Aim2* gene. The brief process is as follows:gRNA was transcribed in vitro, donor was constructed.Cas9, gRNA 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 gene trapped allele exhibit increased susceptibility to bacterial and viral infections with altered cytokine production and inflammatory cell death (pyrotosis).
- Transcripts *Aim2* -201, 203, 206 are not be affected.
- The *Aim2* gene is located on the Chr1. 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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Aim2 absent in melanoma 2 [Mus musculus (house mouse)]

Gene ID: 383619, updated on 9-Apr-2019

Summary

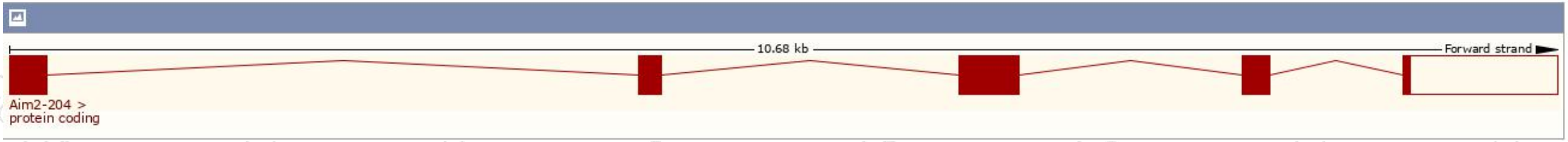
Official Symbol	Aim2 provided by MGI
Official Full Name	absent in melanoma 2 provided by MGI
Primary source	MGI:MGI:2686159
See related	Ensembl:ENSMUSG00000037860
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm1313, Ifi210
Expression	Broad expression in spleen adult (RPKM 1.0), CNS E11.5 (RPKM 0.8) and 22 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

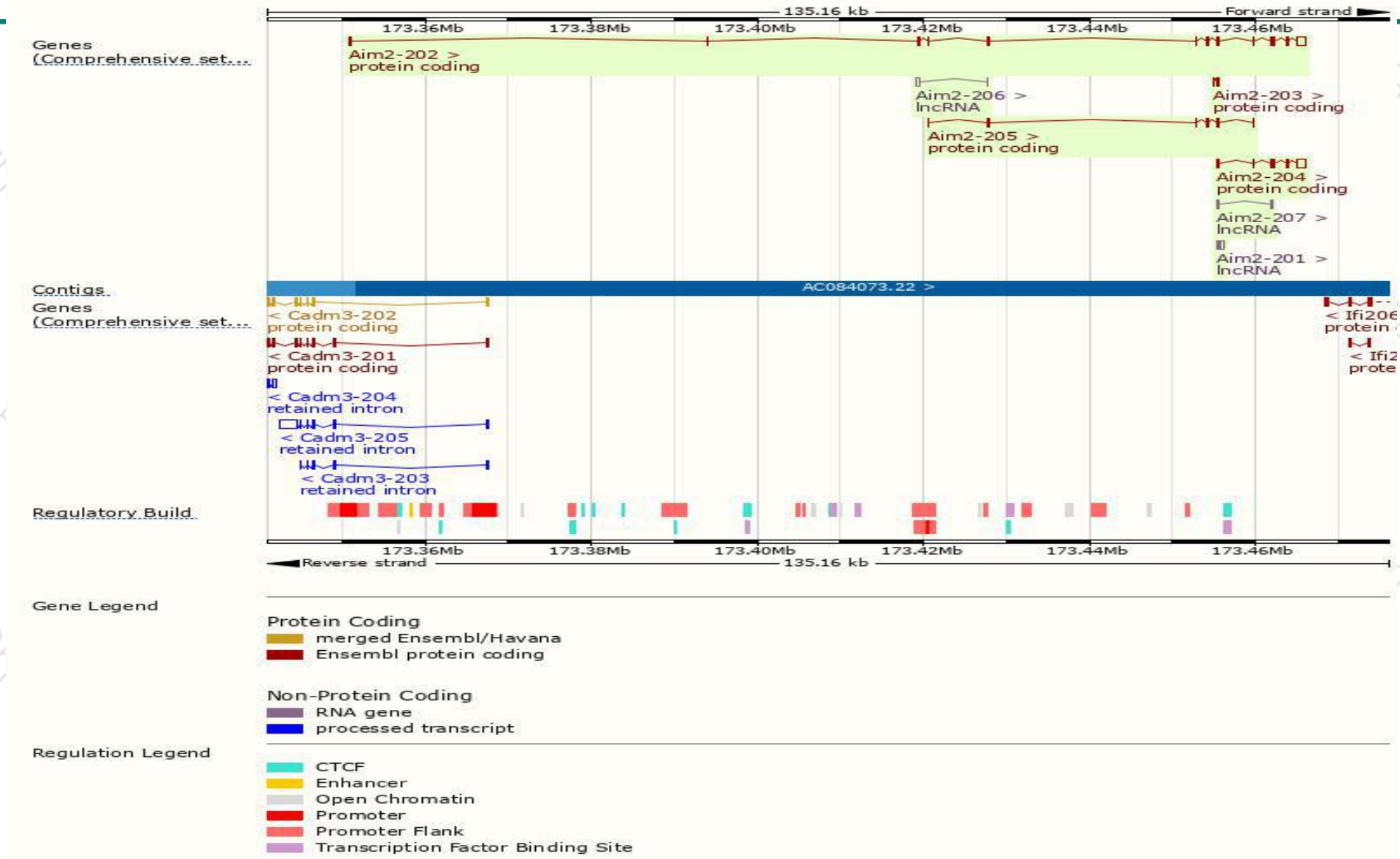
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Aim2-202	ENSMUST00000147604.7	2839	354aa	Protein coding	CCDS15529	Q91VJ1	TSL:5 GENCODE basic APPRIS P1
Aim2-204	ENSMUST00000166137.2	2079	354aa	Protein coding	CCDS15529	Q91VJ1	TSL:5 GENCODE basic APPRIS P1
Aim2-205	ENSMUST00000173023.1	744	94aa	Protein coding	-	G3UZ36	CDS 3' incomplete TSL:1
Aim2-203	ENSMUST00000151176.1	326	80aa	Protein coding	-	D3Z341	CDS 3' incomplete TSL:5
Aim2-206	ENSMUST00000174263.1	383	No protein	lncRNA	-	-	TSL:5
Aim2-201	ENSMUST00000135370.1	372	No protein	lncRNA	-	-	TSL:3
Aim2-207	ENSMUST00000192575.1	363	No protein	lncRNA	-	-	TSL:1

The strategy is based on the design of *Aim2-204* transcript,The transcription is shown below

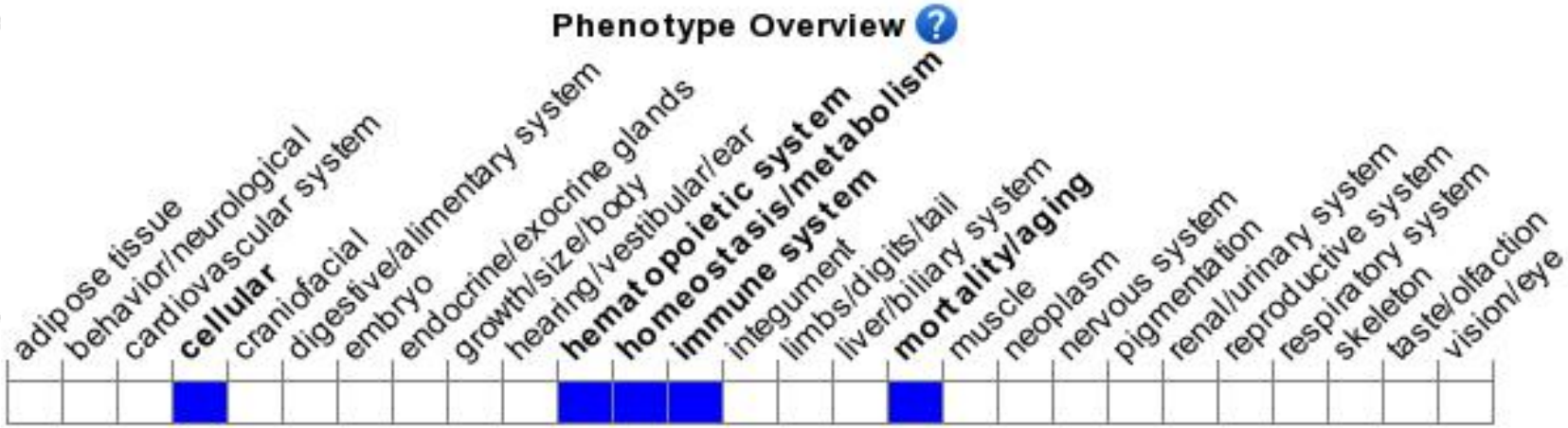


Genomic location distribution



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/).

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

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