Kdm7a Cas9-KO Strategy

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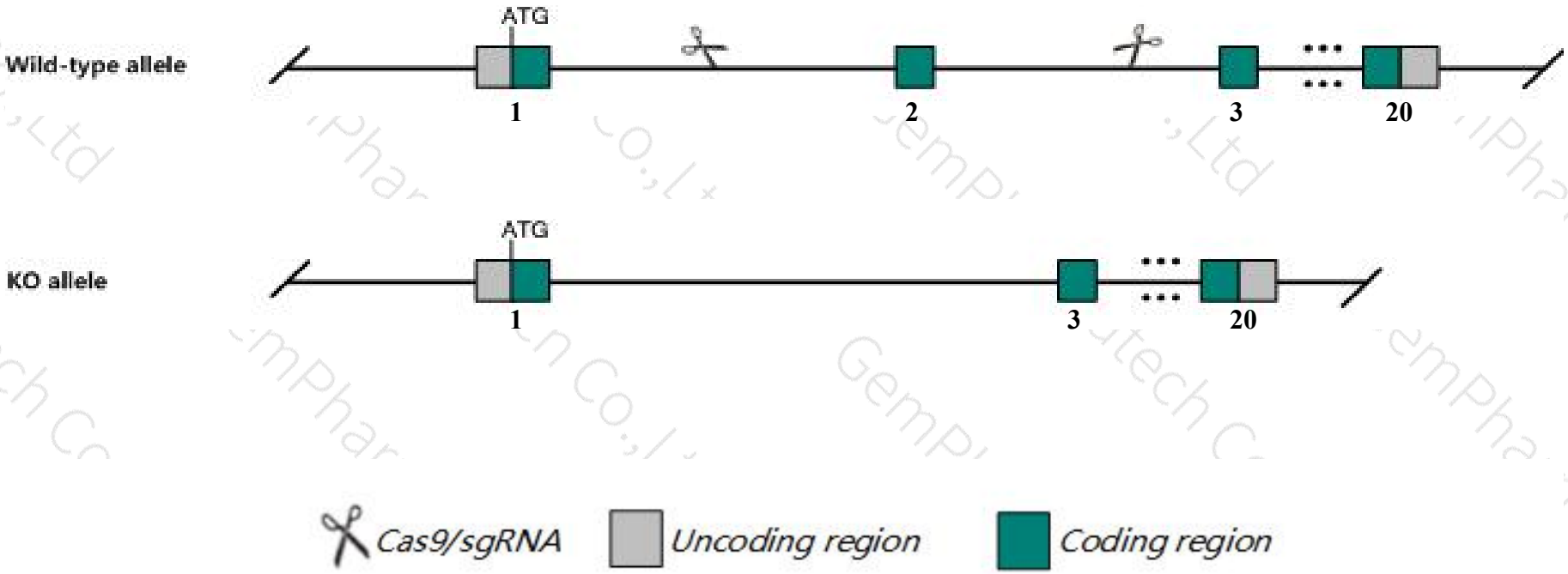
Project Overview

Project Name	***Kdm7a***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kdm7a* gene. The schematic diagram is as follows:



Technical routes

- The *Kdm7a* gene has 2 transcripts. According to the structure of *Kdm7a* gene, exon2 of *Kdm7a-201* (ENSMUST00000002305.8) transcript is recommended as the knockout region.The region contains 86bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Kdm7a* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- According to the existing MGI data,homozygous mutants exhibit abnormal hair follicle, tail, sebaceous gland, rib, and vertebrae morphology and decreased circulating iron levels.

- The *Kdm7a* gene is located on the Chr6. 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）

集萃药康 GemPharmatech

Kdm7a lysine (K)-specific demethylase 7A [Mus musculus (house mouse)]

Gene ID: 338523, updated on 31-Jan-2019

Summary

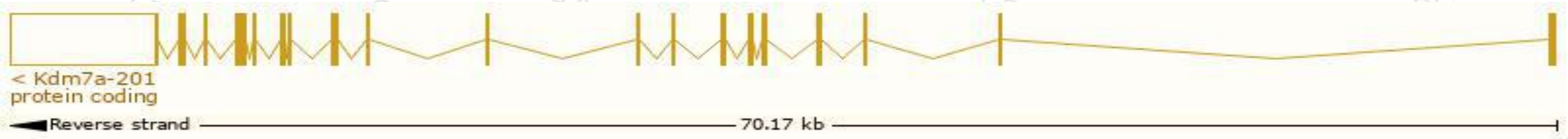
Official Symbol	Kdm7a provided by MGI
Official Full Name	lysine (K)-specific demethylase 7A provided by MGI
Primary source	MGI:MGI:2443388
See related	Ensembl:ENSMUSG00000042599
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A630082K20Rik, BB041802, Jhdm1d, mKIAA1718
Expression	Ubiquitous expression in liver E14 (RPKM 5.3), liver E14.5 (RPKM 4.4) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

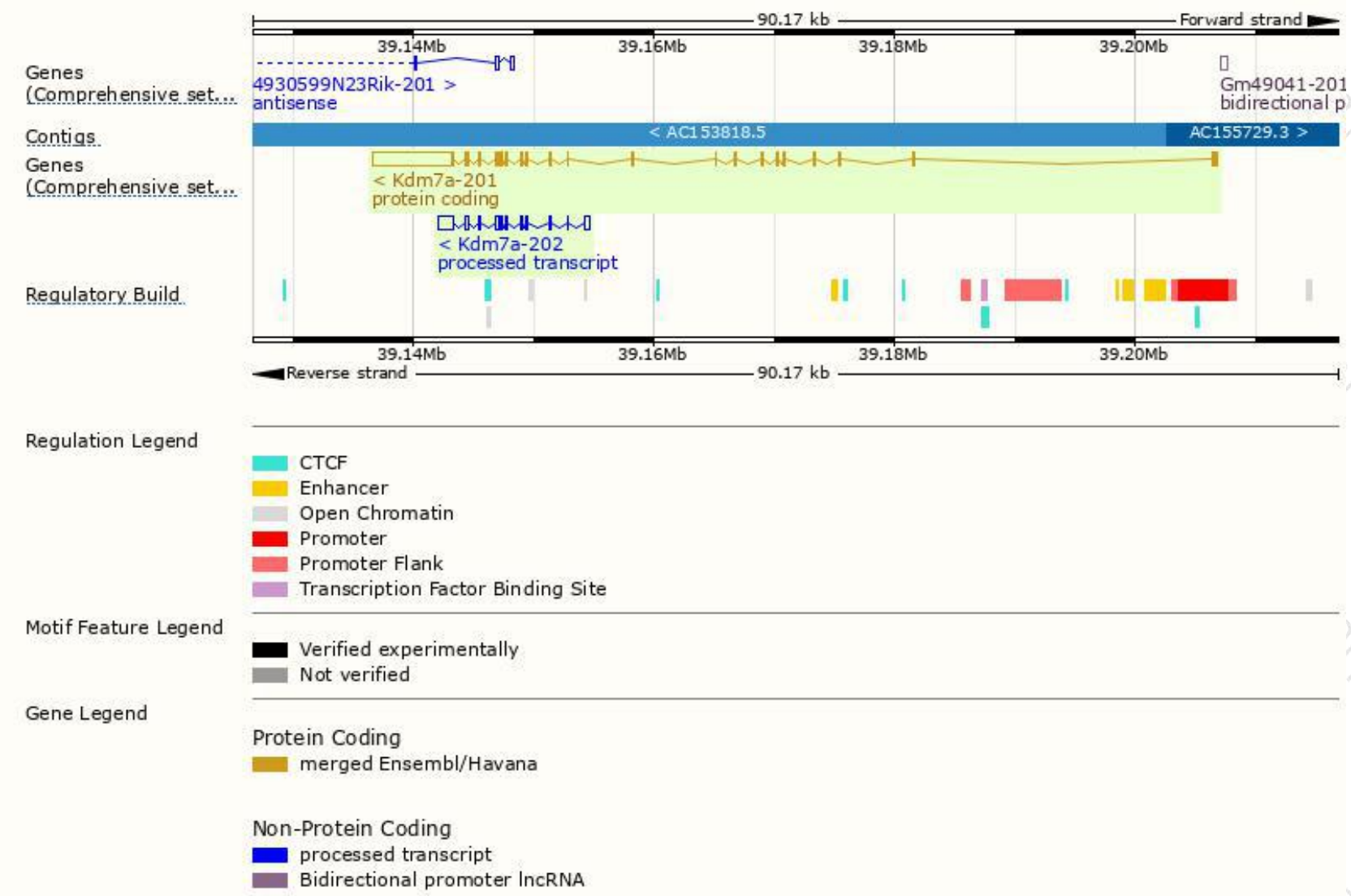
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kdm7a-201	ENSMUST00000002305.8	9566	940aa	Protein coding	CCDS51753	Q3UWM4	TSL:1 GENCODE basic APPRIS P1
Kdm7a-202	ENSMUST00000127036.1	3077	No protein	Processed transcript	-	-	TSL:1

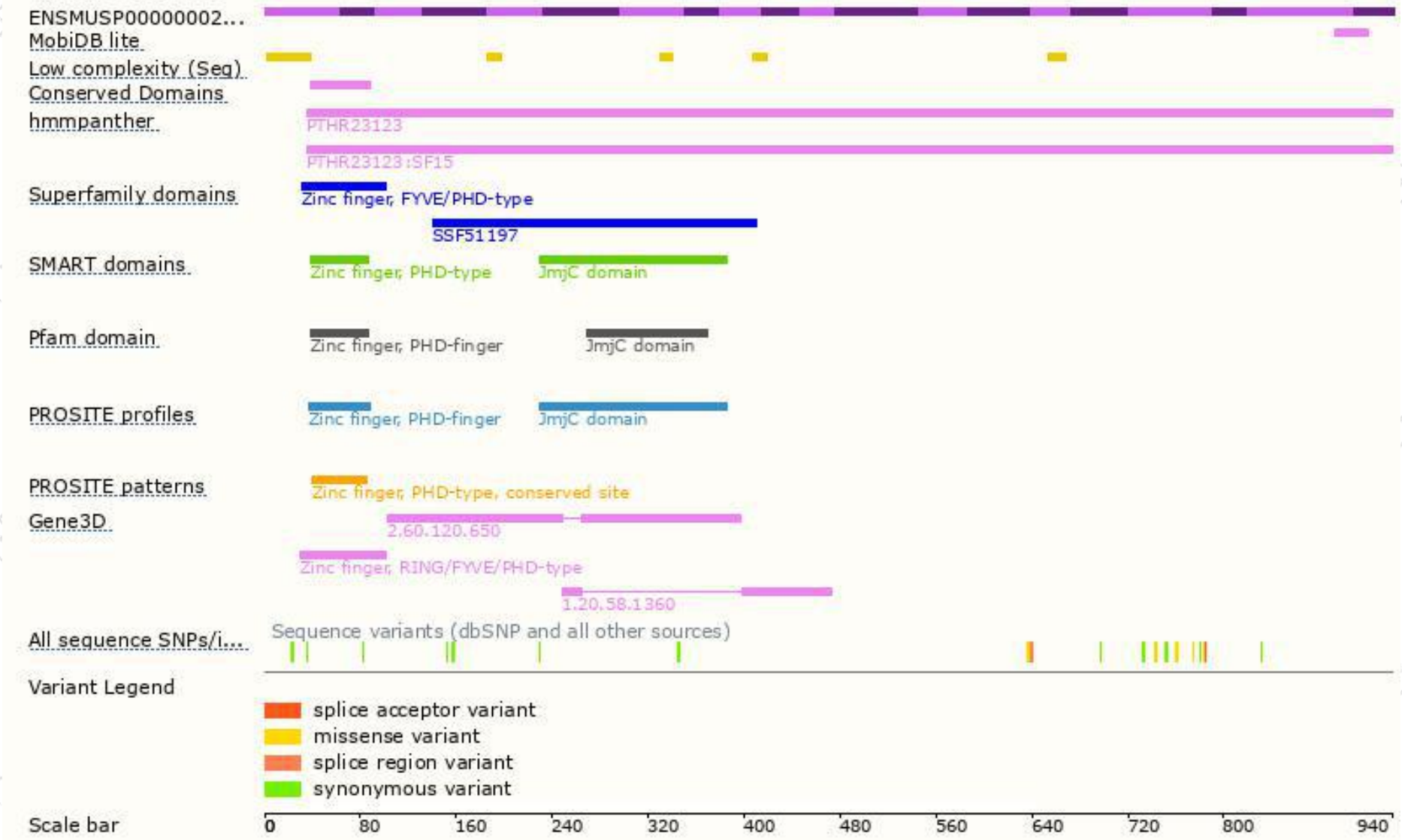
The strategy is based on the design of *Kdm7a-201* transcript,The transcription is shown below



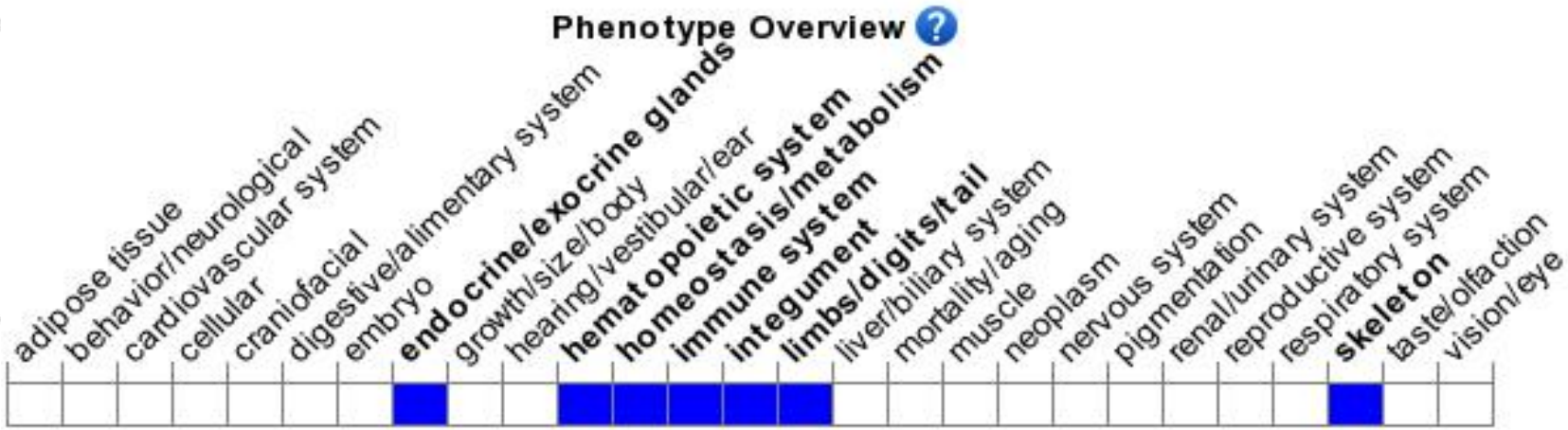
Genomic location distribution



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,Homozygous mutants exhibit abnormal hair follicle, tail, sebaceous gland, rib, and vertebrae morphology and decreased circulating iron levels.

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

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