Mon2 Cas9-KO Strategy

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Project Overview

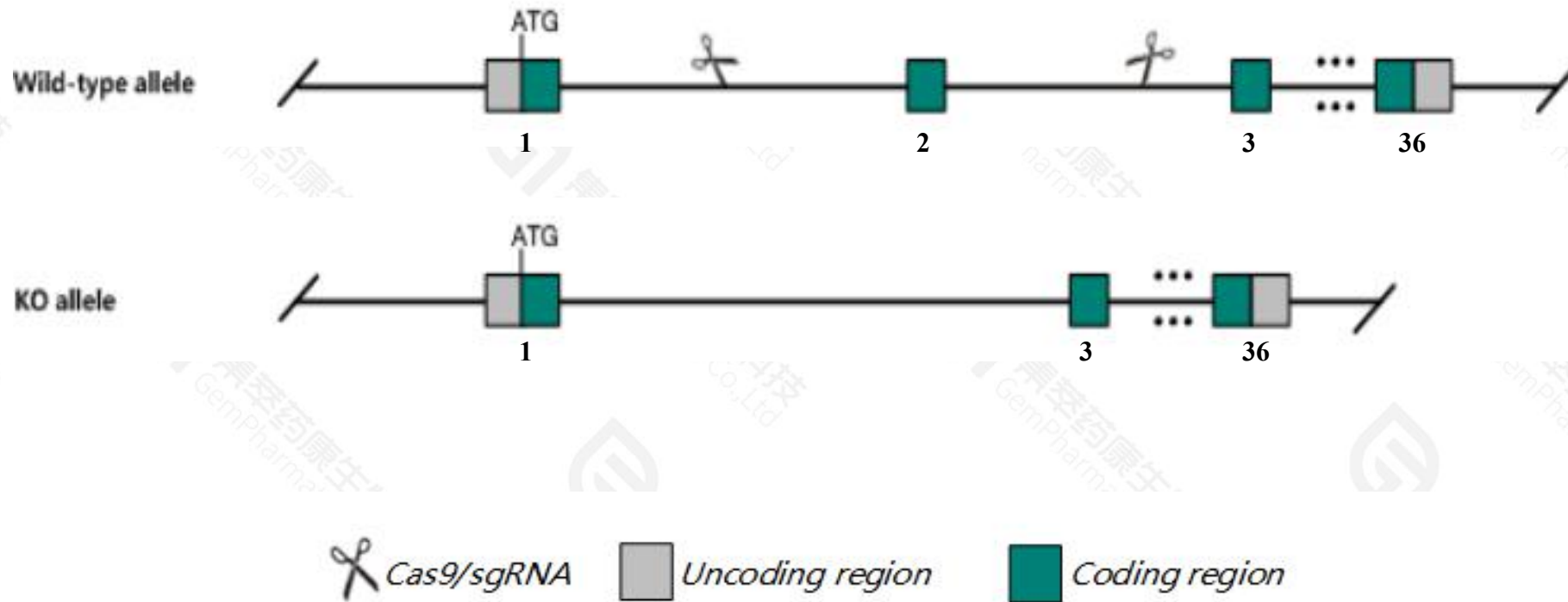|	
Project Name	*Mon2*
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mon2* gene. The schematic diagram is as follows:

Technical routes

➤ The *Mon2* gene has 12 transcripts. According to the structure of *Mon2* gene, exon2 of *Mon2-202*(ENSMUST00000073792.11) transcript is recommended as the knockout region.The region contains 64bp coding sequence. Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Mon2* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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 *Mon2* gene is located on the Chr10. 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）

Mon2 MON2 homolog, regulator of endosome to Golgi trafficking [Mus musculus (house mouse)]

Gene ID: 67074, updated on 17-Dec-2020

▲ Summary

|	
Official Symbol	Mon2 provided by MGI
Official Full Name	MON2 homolog, regulator of endosome to Golgi trafficking provided by MGI
Primary source	MGI:MGI:1914324
See related	Ensembl:ENSMUSG00000034602
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	2610528O22Rik, AW495628, SF2, Sf21, mKIAA1040
Expression	Ubiquitous expression in limb E14.5 (RPKM 7.0), genital fat pad adult (RPKM 6.4) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mon2-202	ENSMUST00000073792.11	9301	1715aa	Protein coding	CCDS48707		TSL:5 , GENCODE basic , APPRIS ALT2 ,
Mon2-201	ENSMUST00000037557.9	5511	1708aa	Protein coding	CCDS24216		TSL:1 , GENCODE basic , APPRIS P3 ,
Mon2-203	ENSMUST00000170935.9	5302	1709aa	Protein coding	CCDS48708		TSL:1 , GENCODE basic , APPRIS ALT2 ,
Mon2-207	ENSMUST00000219203.2	1844	436aa	Protein coding	-		TSL:1 , GENCODE basic ,
Mon2-204	ENSMUST00000218253.2	225	No protein	Processed transcript	-		TSL:3 ,
Mon2-206	ENSMUST00000219001.2	4053	No protein	Retained intron	-		TSL:1 ,
Mon2-212	ENSMUST00000222536.2	3978	No protein	Retained intron	-		TSL:5 ,
Mon2-208	ENSMUST00000219241.2	882	No protein	Retained intron	-		TSL:2 ,
Mon2-211	ENSMUST00000220201.2	882	No protein	Retained intron	-		TSL:3 ,
Mon2-205	ENSMUST00000218735.2	765	No protein	Retained intron	-		TSL:2 ,
Mon2-210	ENSMUST00000219515.2	481	No protein	Retained intron	-		TSL:3 ,
Mon2-209	ENSMUST00000219290.2	459	No protein	Retained intron	-		TSL:2 ,

The strategy is based on the design of *Mon2-202* transcript,the transcription is shown below:

< Mon2-202
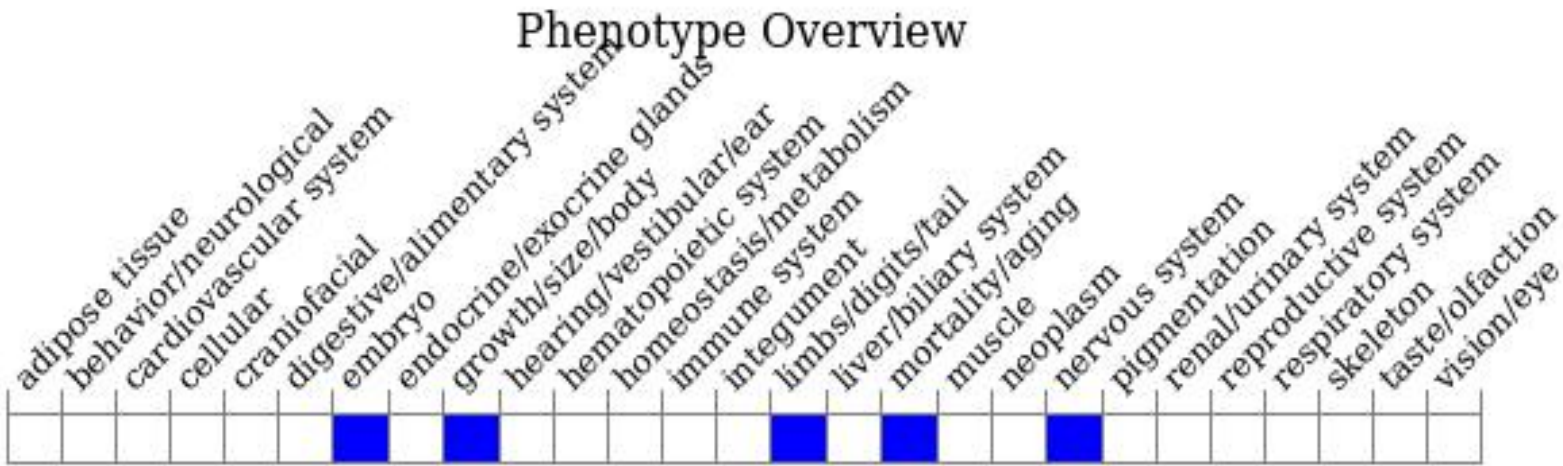protein coding

◄ Reverse strand

84.45 kb
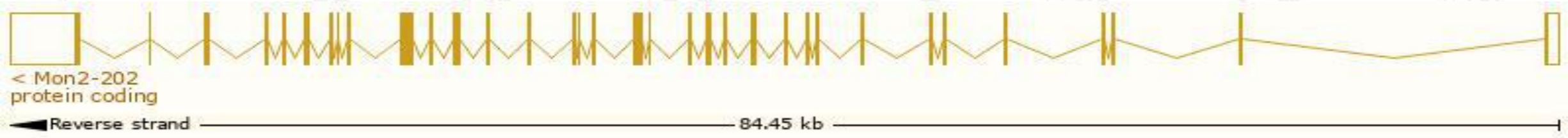
Genomic location distribution
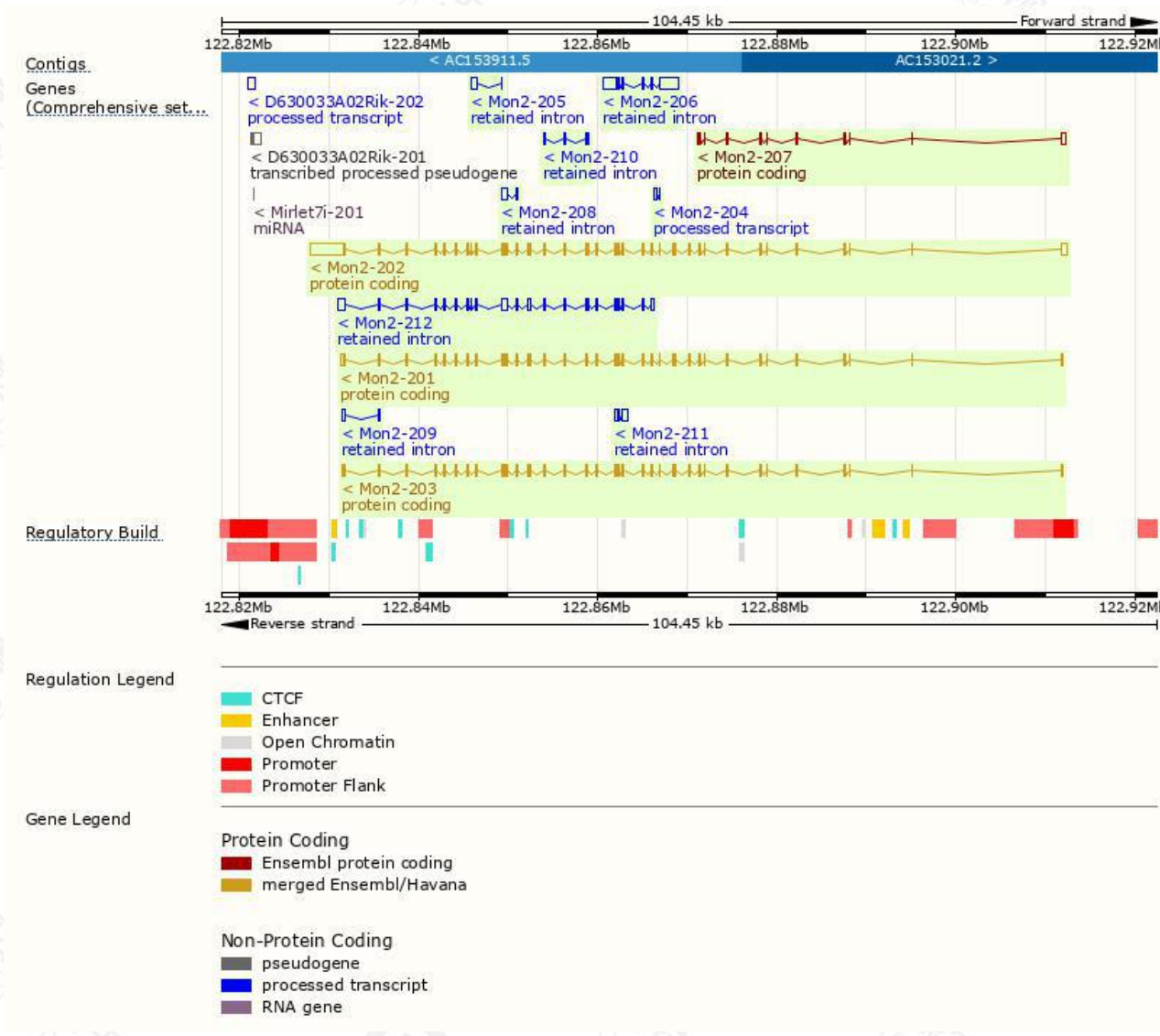
Protein domain
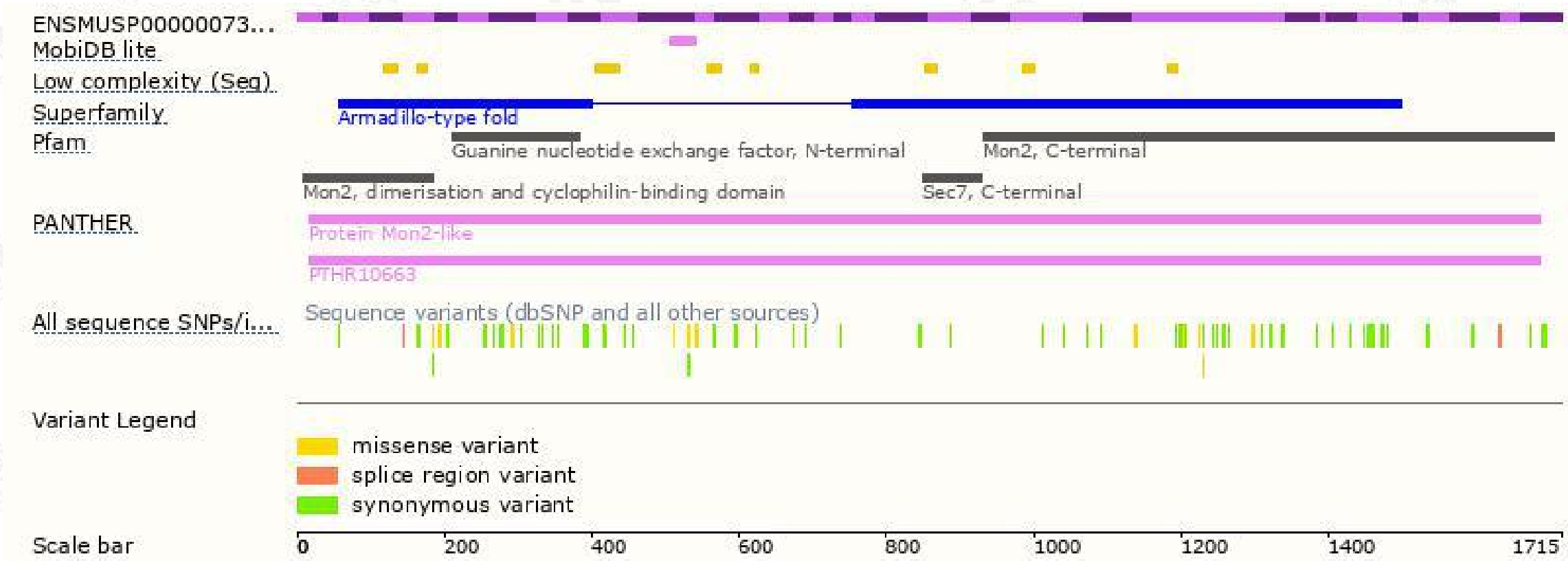
Mouse phenotype description(MGI)

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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