Pan2 Cas9-KO Strategy

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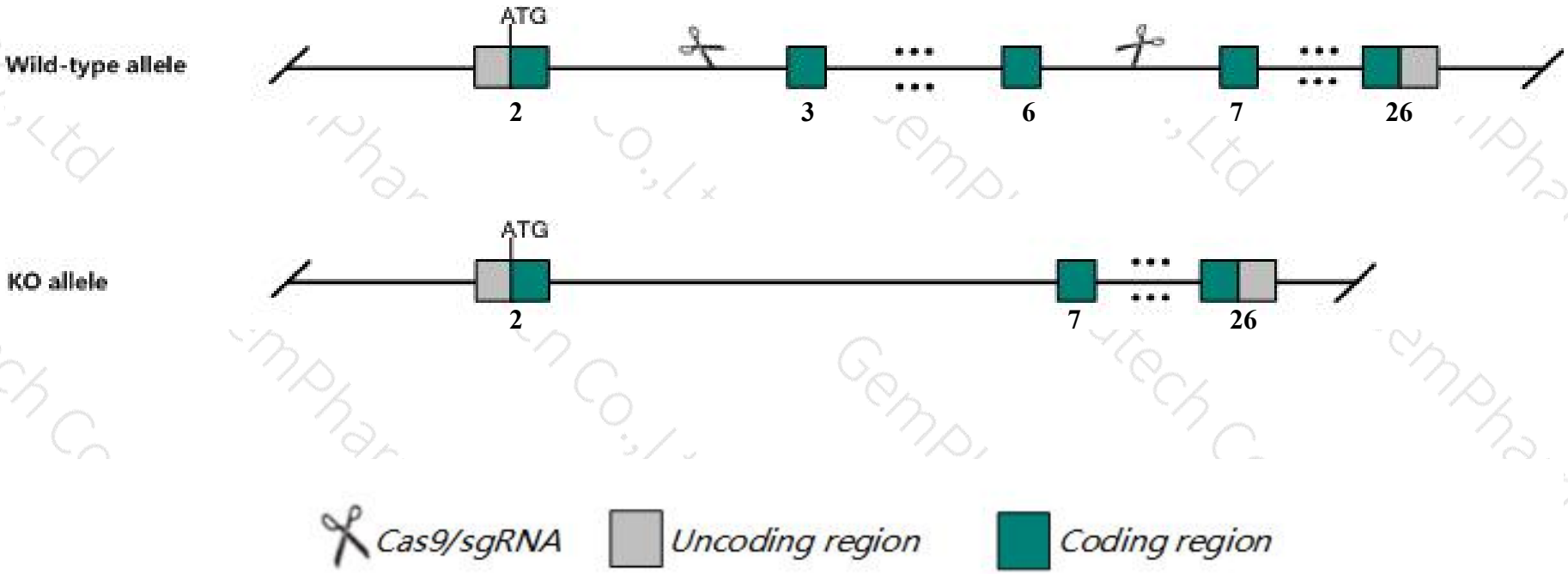
Project Overview

Project Name	***Pan2***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pan2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Pan2* gene has 7 transcripts. According to the structure of *Pan2* gene, exon3-exon6 of *Pan2-201* (ENSMUST00000005825.7) transcript is recommended as the knockout region.The region contains 637bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Pan2* 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,Mice homozygous for an ENU-induced allele exhibit embryonic lethality.

➢ The *Pan2* 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）

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Pan2 PAN2 poly(A) specific ribonuclease subunit [Mus musculus (house mouse)]

Gene ID: 103135, updated on 31-Jan-2019

Summary

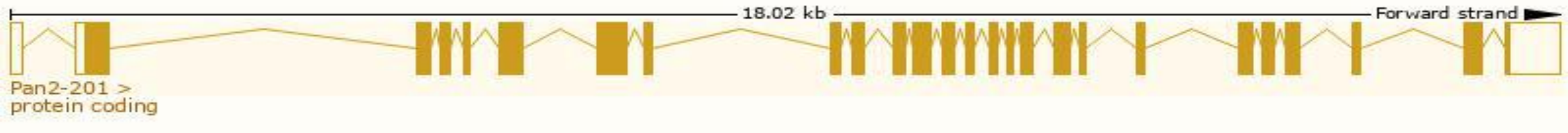
Official Symbol	Pan2 provided by MGI
Official Full Name	PAN2 poly(A) specific ribonuclease subunit provided by MGI
Primary source	MGI:MGI:1918984
See related	Ensembl:ENSMUSG00000005682
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1200014O24Rik, AI047843, AW742773, Usp52, mKIAA0710
Expression	Ubiquitous expression in thymus adult (RPKM 19.4), limb E14.5 (RPKM 15.5) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

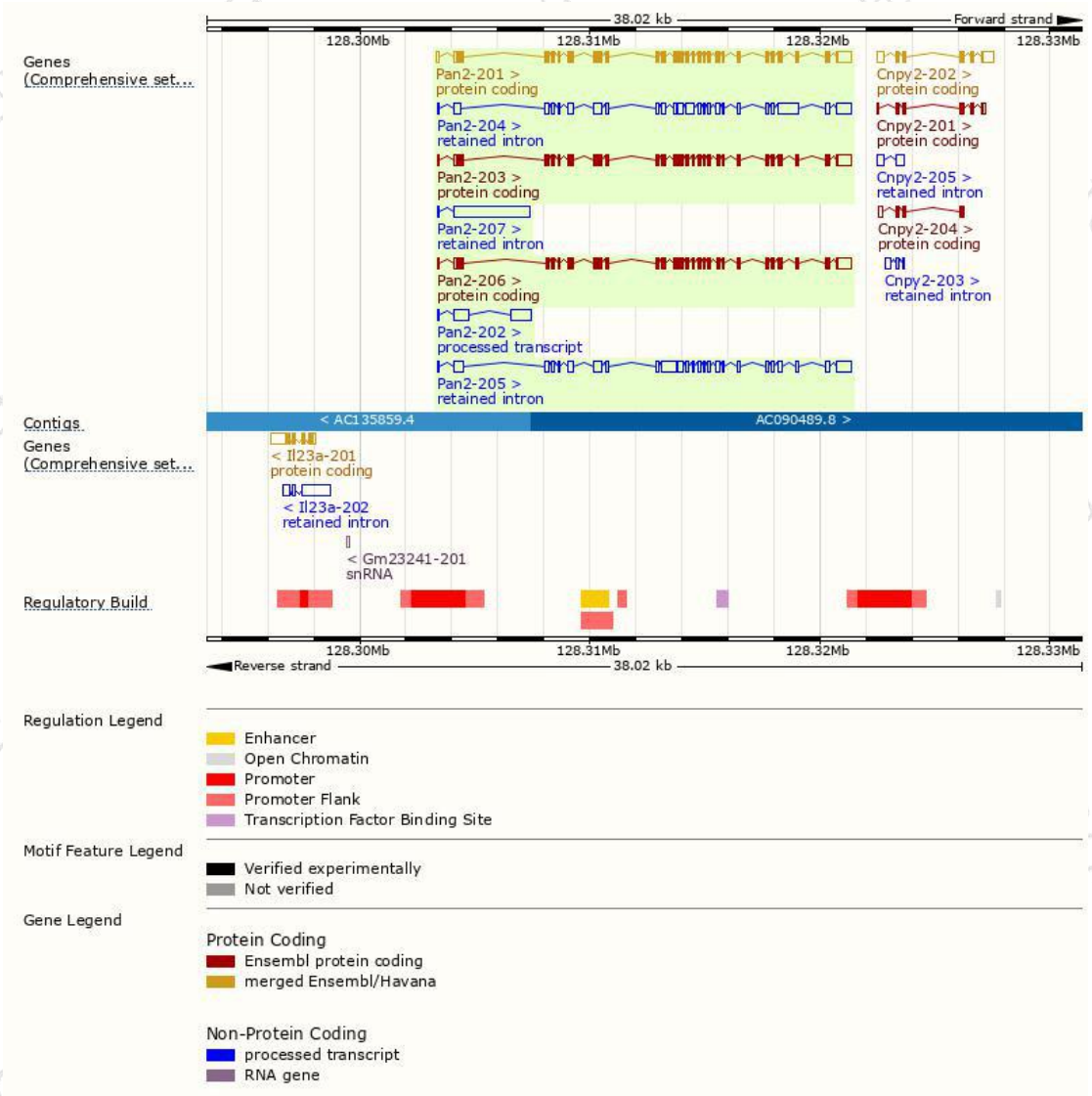
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pan2-201	ENSMUST00000005825.7	4445	1200aa	Protein coding	CCDS24271	Q8BGF7	TSL:1 GENCODE basic APPRIS P2
Pan2-203	ENSMUST00000218315.1	4379	1191aa	Protein coding	-	Q8BGF7	TSL:1 GENCODE basic APPRIS ALT2
Pan2-206	ENSMUST00000219721.1	4316	1173aa	Protein coding	-	Q8BGF7	TSL:1 GENCODE basic APPRIS ALT2
Pan2-202	ENSMUST00000218137.1	1601	No protein	Processed transcript	-	-	TSL:1
Pan2-204	ENSMUST00000218496.1	5051	No protein	Retained intron	-	-	TSL:2
Pan2-205	ENSMUST00000219255.1	4759	No protein	Retained intron	-	-	TSL:2
Pan2-207	ENSMUST00000219801.1	3410	No protein	Retained intron	-	-	TSL:1

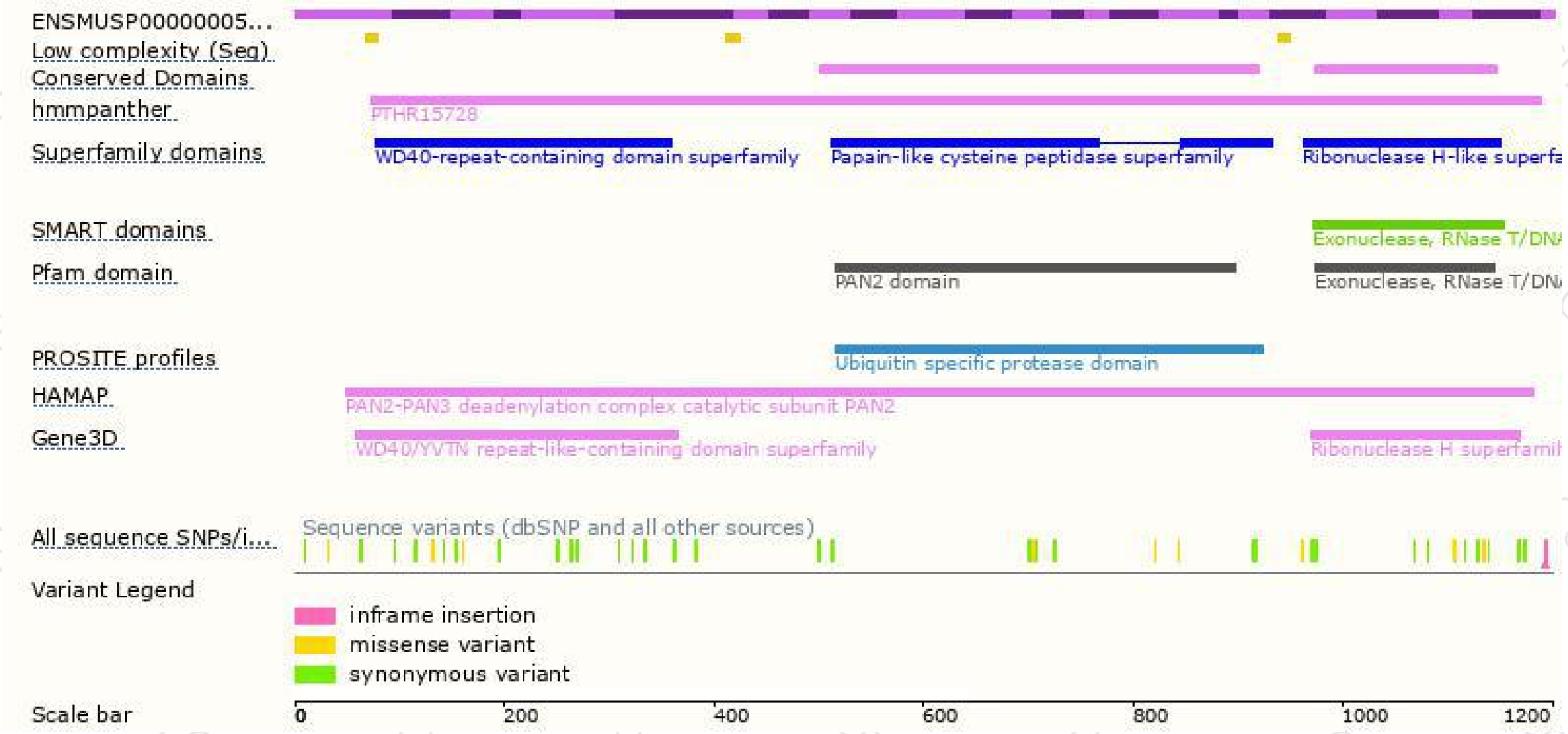
The strategy is based on the design of *Pan2-201* transcript,The transcription is shown below



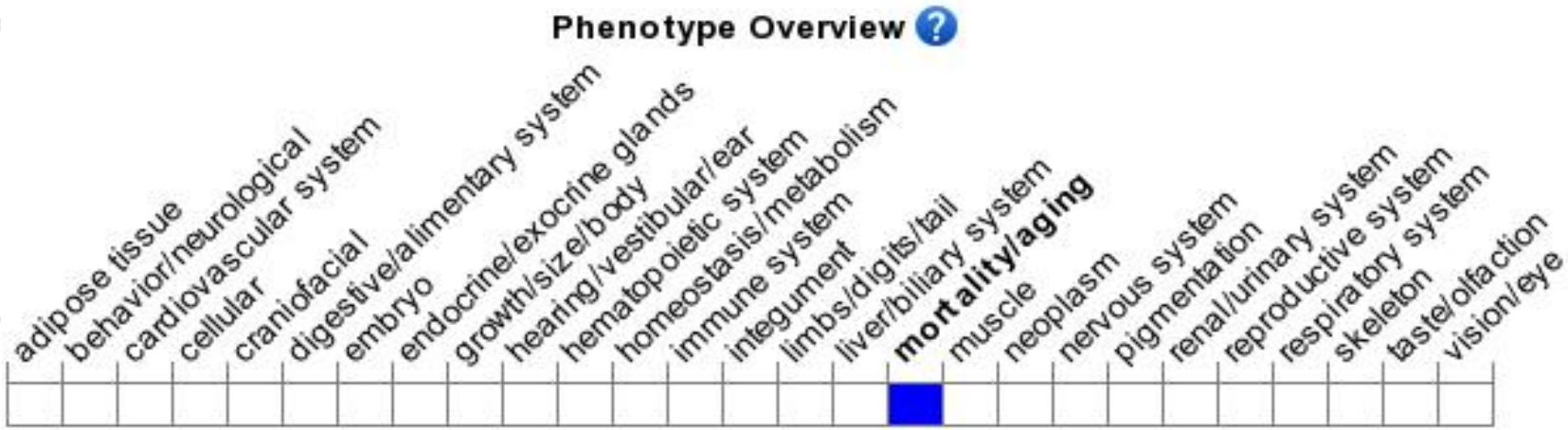
Genomic location distribution



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 an ENU-induced allele exhibit embryonic lethality.

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

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