Pkp3 Cas9-KO Strategy

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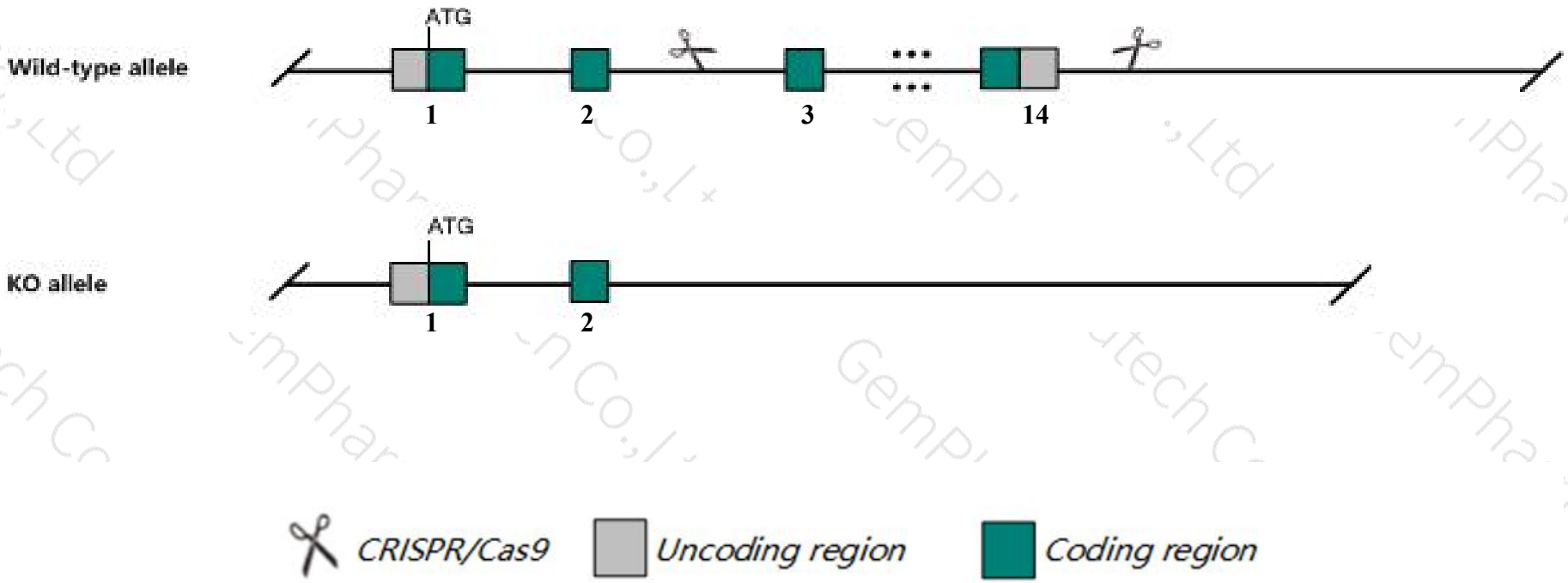
Project Overview

Project Name	***Pkp3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pkp3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Pkp3* gene has 9 transcripts. According to the structure of *Pkp3* gene, exon3-exon14 of *Pkp3-202* (ENSMUST00000106039.8) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Pkp3* gene. The brief process is as follows: CRISPR/Cas9 system v

Notice

- According to the existing MGI data,Mice homozygous for a null allele exhibit retarded hair growth, epidermal thickening and abnormal hair follicles that lead to secondary alopecia and acute dermatitis.
- The knockout region is near to the C-terminal of *Sigirr* gene,this strategy may influence the regulatory function of the C-terminal of *Sigirr* gene.
- The *Pkp3* gene is located on the Chr7. 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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Pkp3 plakophilin 3 [*Mus musculus* (house mouse)]

Gene ID: 56460, updated on 3-Sep-2019

Summary

Official Symbol	Pkp3 provided by MGI
Official Full Name	plakophilin 3 provided by MGI
Primary source	MGI:MGI:1891830
See related	Ensembl:ENSMUSG00000054065
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	2310056L12Rik
Expression	Biased expression in small intestine adult (RPKM 54.7), colon adult (RPKM 49.3) and 13 other tissues See more
Orthologs	human all

Genomic context

Location: 7; 7 F5

See Pkp3 in Genome Data Viewer

Exon count: 15

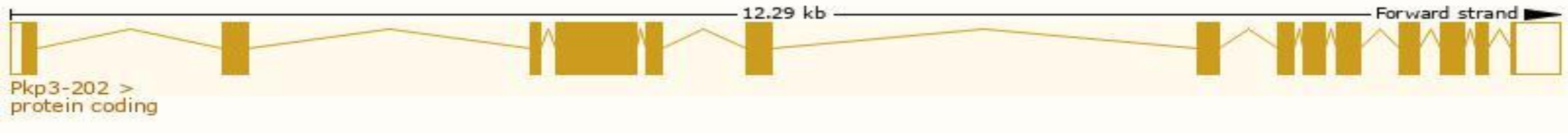
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	7	NC_000073.6 (141078229..141090511)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	7	NC_000073.5 (148264128..148276409)

Transcript information（Ensembl）

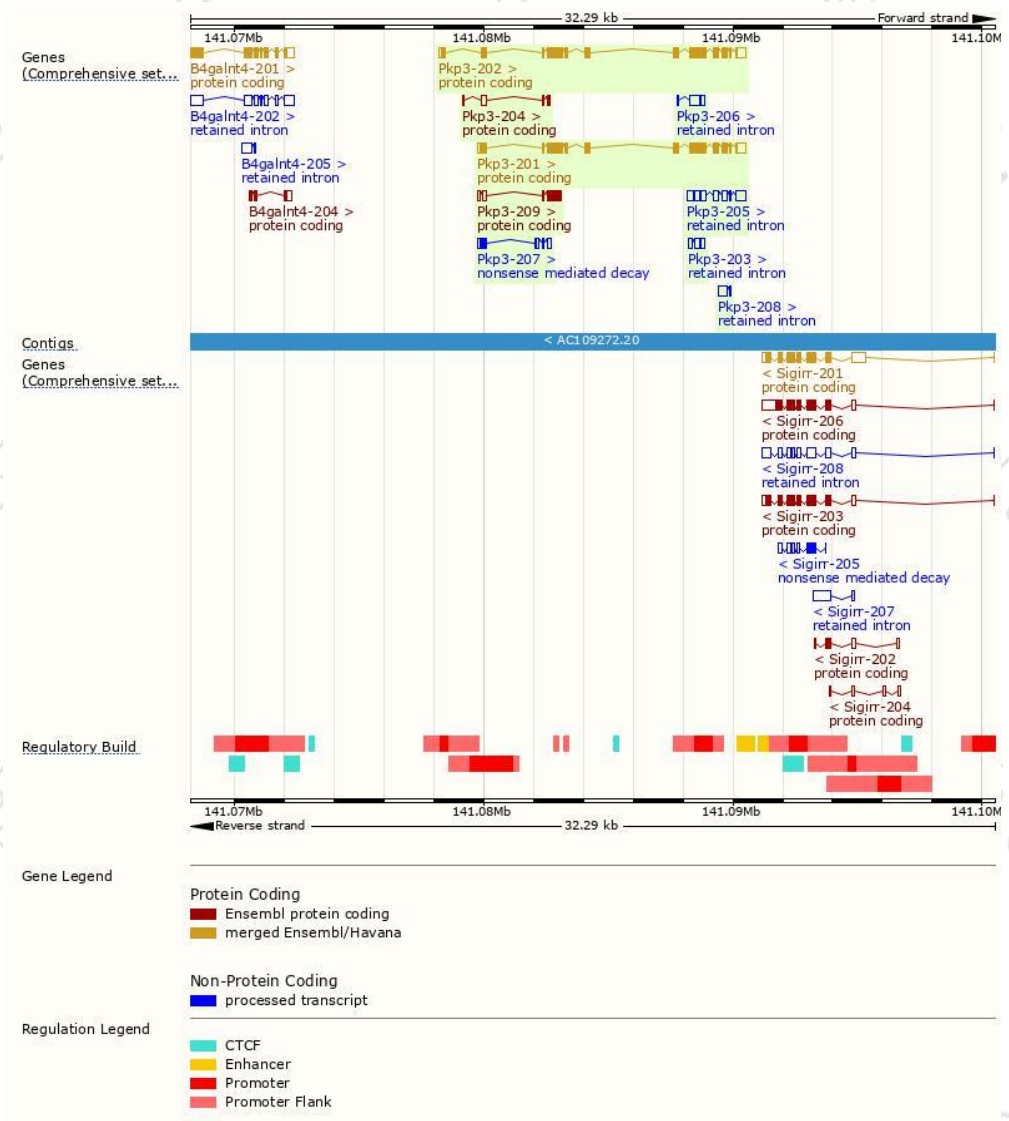
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pkp3-202	ENSMUST00000106039.8	2919	822aa	Protein coding	CCDS52437	Q9QY23	TSL:1 GENCODE basic APPRIS ALT2
Pkp3-201	ENSMUST00000066873.4	2848	797aa	Protein coding	CCDS21999	Q9QY23	TSL:1 GENCODE basic APPRIS P3
Pkp3-209	ENSMUST00000163041.1	866	215aa	Protein coding	-	E0CY75	CDS 3' incomplete TSL:2
Pkp3-204	ENSMUST00000159375.7	417	56aa	Protein coding	-	E0CY06	CDS 3' incomplete TSL:2
Pkp3-207	ENSMUST00000160869.1	670	87aa	Nonsense mediated decay	-	E0CYP0	TSL:3
Pkp3-205	ENSMUST00000160403.7	1425	No protein	Retained intron	-	-	TSL:1
Pkp3-206	ENSMUST00000160615.1	557	No protein	Retained intron	-	-	TSL:3
Pkp3-203	ENSMUST00000159253.1	458	No protein	Retained intron	-	-	TSL:3
Pkp3-208	ENSMUST00000161142.1	412	No protein	Retained intron	-	-	TSL:3

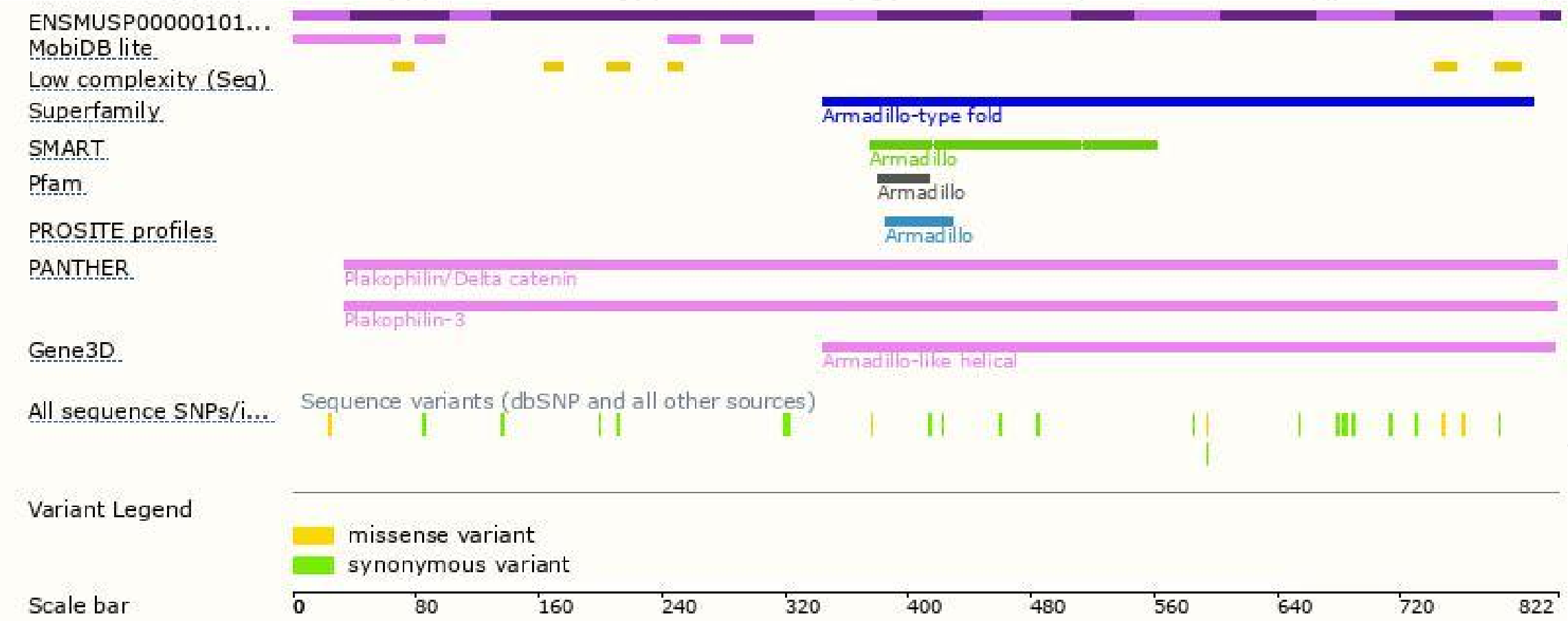
The strategy is based on the design of *Pkp3-202* transcript,The transcription is shown below



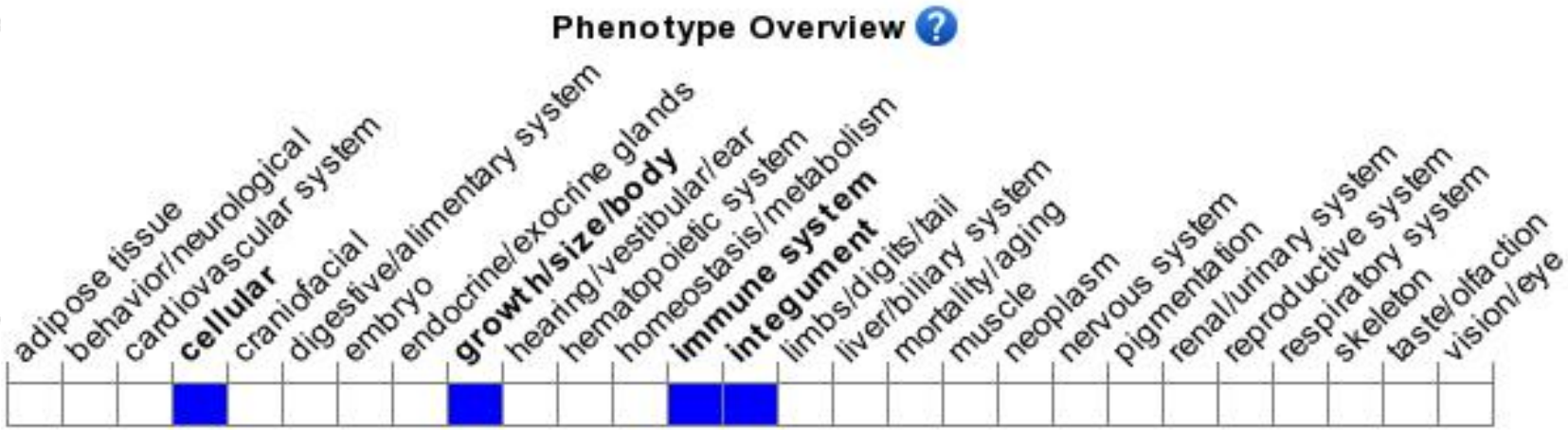
Genomic location distribution



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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