Ptpn3 Cas9-KO Strategy

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Reviewer: Xiaojing Li

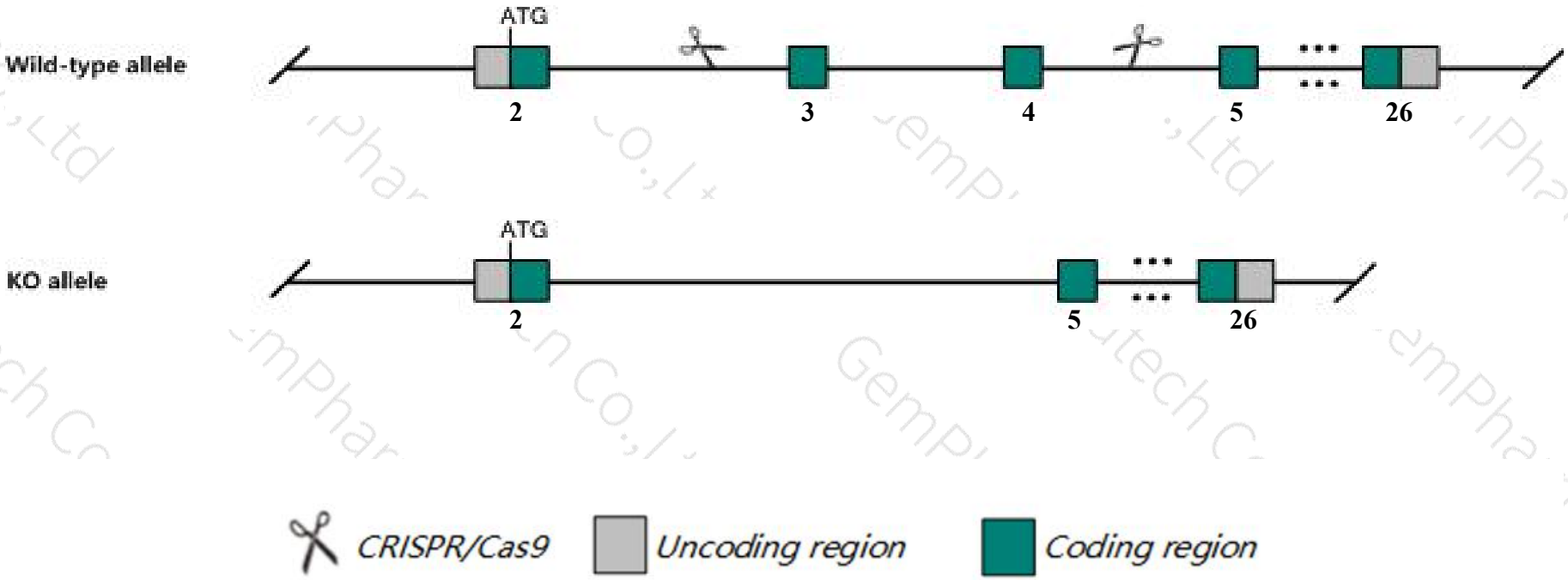
Design Date: 2020-2-19

Project Overview

Project Name	***Ptpn3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptpn3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ptpn3* gene has 6 transcripts. According to the structure of *Ptpn3* gene, exon3-exon4 of *Ptpn3-201* (ENSMUST00000075637.10) transcript is recommended as the knockout region.The region contains 151bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ptpn3* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mice homozygous for a null allele exhibit increased body weight, especially in males, and male mice exhibit increased bone mineral content.

- The *Ptpn3* gene is located on the Chr4. 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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Ptpn3 protein tyrosine phosphatase, non-receptor type 3 [Mus musculus (house mouse)]

Gene ID: 545622, updated on 31-Jan-2019

Summary

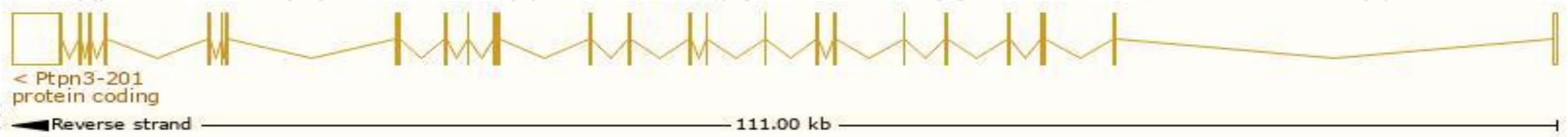
Official Symbol	Ptpn3 provided by MGI
Official Full Name	protein tyrosine phosphatase, non-receptor type 3 provided by MGI
Primary source	MGI:MGI:105307
See related	Ensembl:ENSMUSG00000038764
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9530011I20Rik, PTP-H1, PTPCL
Expression	Ubiquitous expression in bladder adult (RPKM 7.3), cortex adult (RPKM 5.5) and 25 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

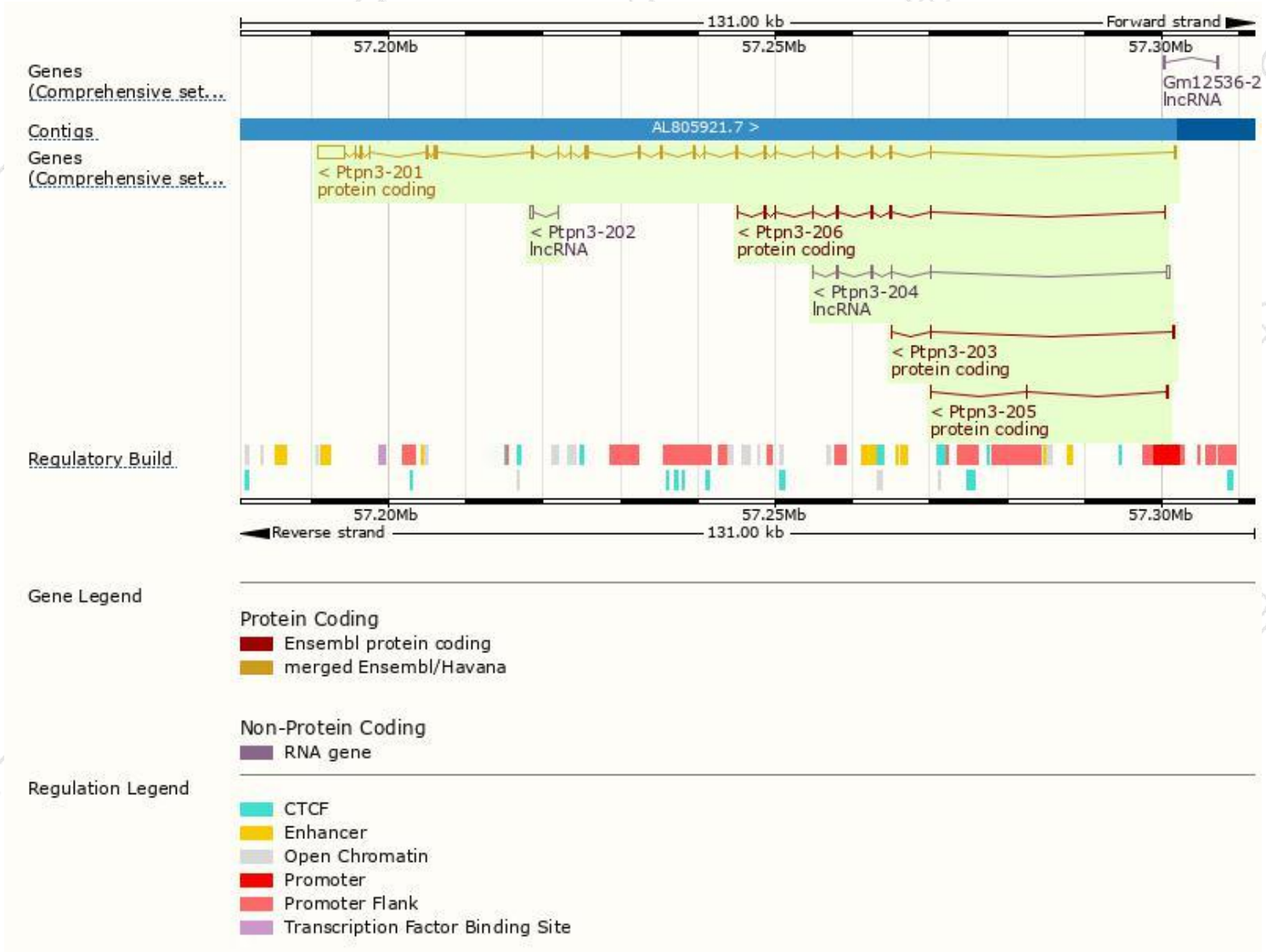
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptpn3-201	ENSMUST00000075637.10	6369	913aa	Protein coding	CCDS51181	A2ALK8	TSL:5 GENCODE basic APPRIS P1
Ptpn3-206	ENSMUST00000153926.7	800	229aa	Protein coding	-	A2ALK9	CDS 3' incomplete TSL:5
Ptpn3-205	ENSMUST00000151964.1	397	37aa	Protein coding	-	A2ALL1	CDS 3' incomplete TSL:5
Ptpn3-203	ENSMUST00000130900.1	372	57aa	Protein coding	-	A2ALL0	CDS 3' incomplete TSL:5
Ptpn3-204	ENSMUST00000150445.1	763	No protein	lncRNA	-	-	TSL:5
Ptpn3-202	ENSMUST00000123664.1	480	No protein	lncRNA	-	-	TSL:3

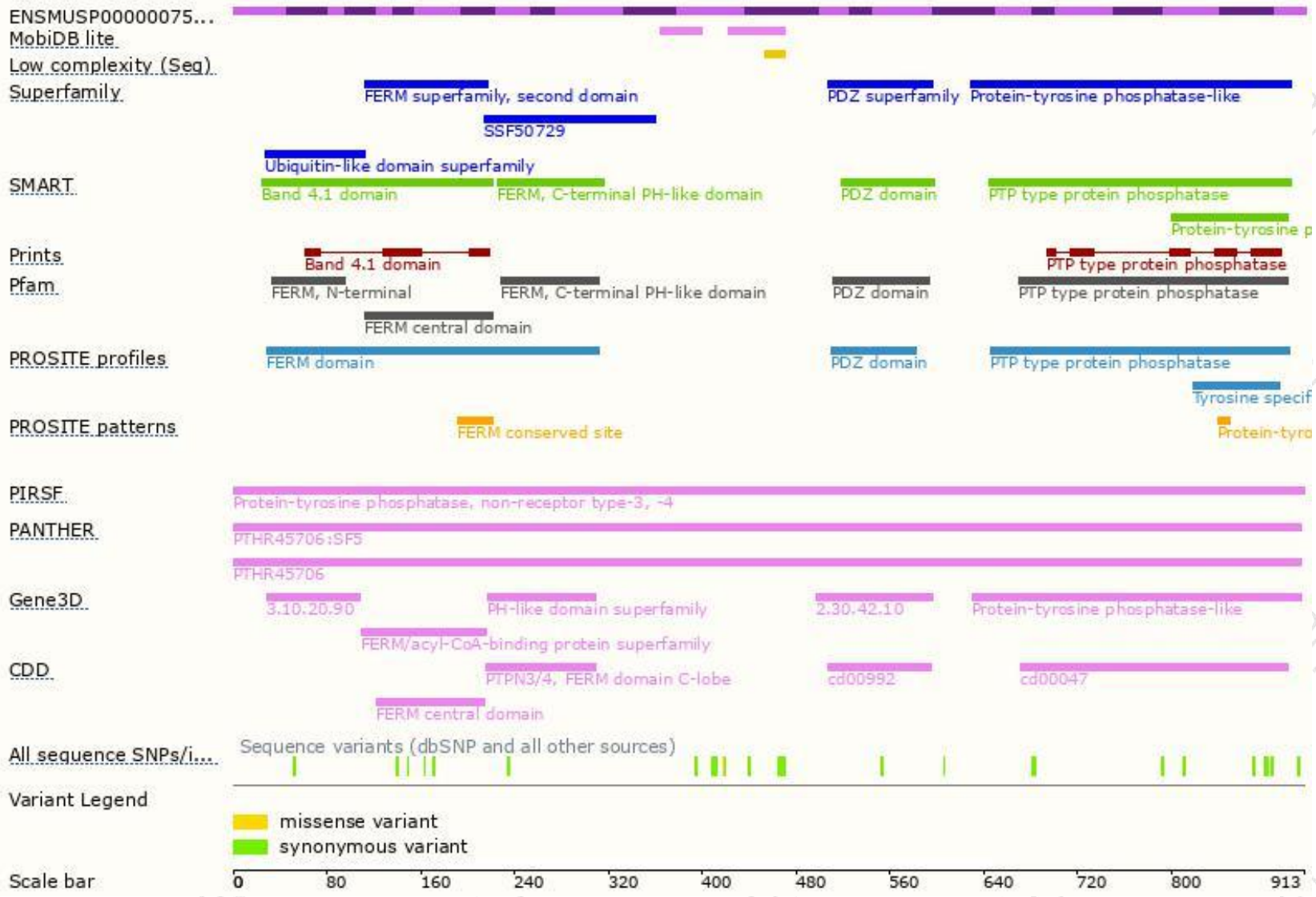
The strategy is based on the design of *Ptpn3-201* transcript,The transcription is shown below



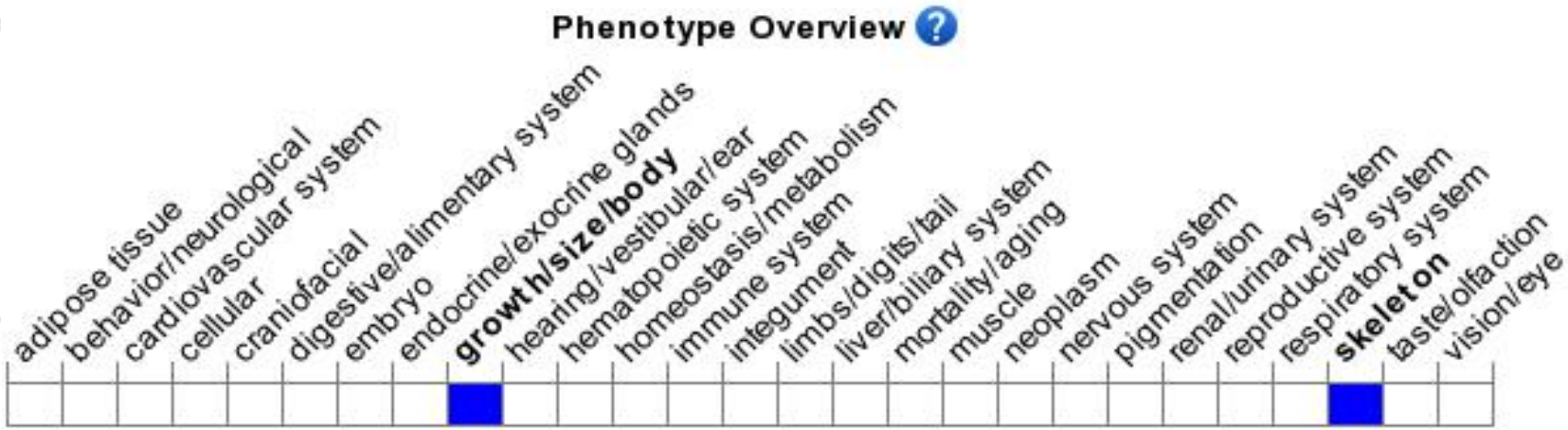
Genomic location distribution



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 a null allele exhibit increased body weight, especially in males, and male mice exhibit increased bone mineral content.

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

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