Postn Cas9-CKO Strategy

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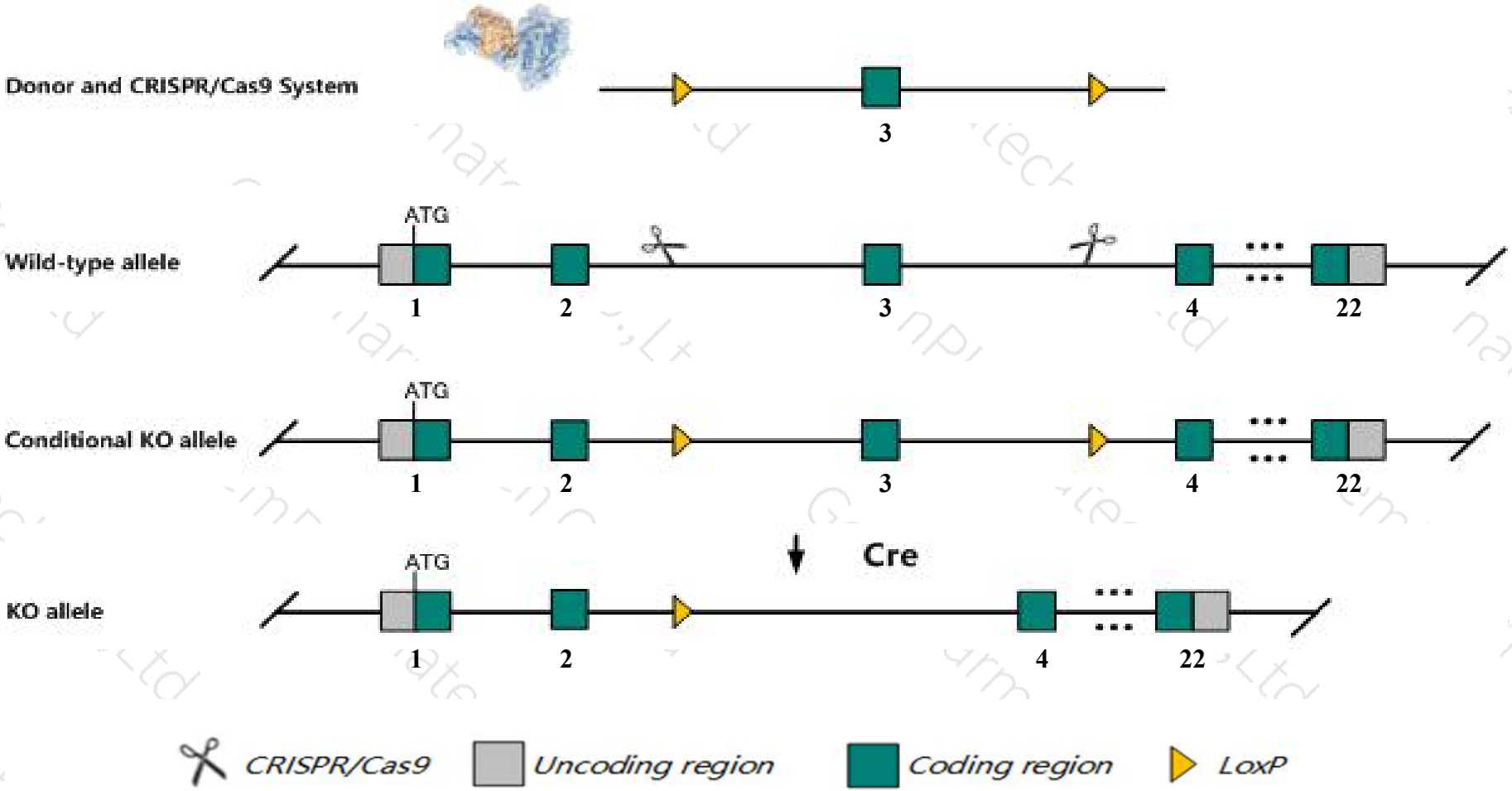
Project Overview

Project Name	***Postn***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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



Technical routes

- The *Postn* gene has 9 transcripts. According to the structure of *Postn* gene, exon3 of *Postn-203* (ENSMUST00000107985.9) transcript is recommended as the knockout region.The region contains 65bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Postn* gene. The brief process is as follows:CRISPR/Cas9 system and Donor 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 flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

➢ According to the existing MGI data,Homozygous null mice display abnormalities of the enamel, periodontal ligament, ameloblasts, and incisors. For one allele changing the hardness of the food alters the severity of the abnormalities.

➢Transcript *Postn-206* may not be affected.

➢ The *Postn* gene is located on the Chr3. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Postn periostin, osteoblast specific factor [Mus musculus (house mouse)]

Gene ID: 50706, updated on 16-Feb-2019

Summary

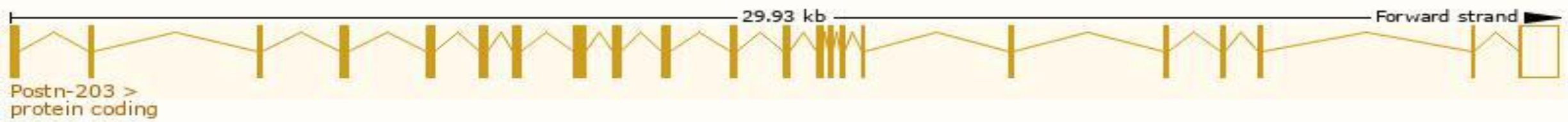
Official Symbol	Postn provided by MGI
Official Full Name	periostin, osteoblast specific factor provided byMGI
Primary source	MGI:MGI:1926321
See related	Ensembl:ENSMUSG00000027750
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A630052E07Rik, AI747096, OSF-2, Osf2, PLF, PN
Summary	This gene encodes a secreted extracellular matrix protein that functions in tissue development and regeneration, including wound healing and ventricular remodeling following myocardial infarction. The encoded protein binds to integrins to support adhesion and migration of epithelial cells. This protein plays a role in cancer stem cell maintenance and metastasis. Mice lacking this gene exhibit cardiac valve disease, and skeletal and dental defects. Alternative splicing results in multiple transcript variants encoding different isoforms. [provided by RefSeq, Sep 2015]
Expression	Biased expression in limb E14.5 (RPKM 151.8), placenta adult (RPKM 112.7) and 12 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

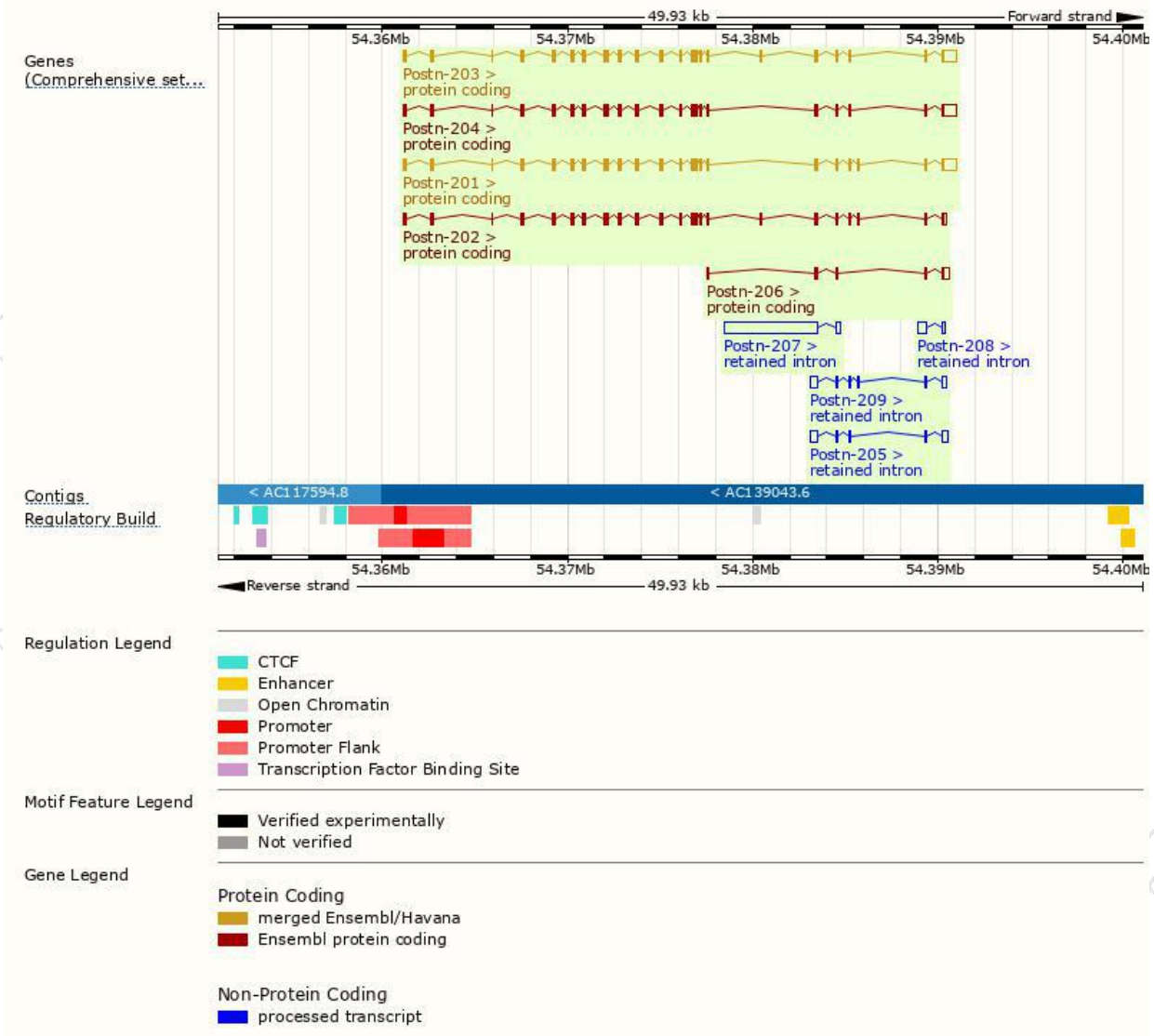
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Postn-203	ENSMUST00000107985.9	3205	810aa	Protein coding	CCDS57211	Q62009	TSL:1 GENCODE basic APPRIS ALT2
Postn-201	ENSMUST00000073012.12	3189	811aa	Protein coding	CCDS17351	Q62009	TSL:1 GENCODE basic APPRIS P3
Postn-204	ENSMUST00000117373.7	3121	783aa	Protein coding	CCDS57212	Q62009	TSL:1 GENCODE basic APPRIS ALT2
Postn-202	ENSMUST00000081564.12	2670	838aa	Protein coding	-	Q62009	TSL:5 GENCODE basic APPRIS ALT2
Postn-206	ENSMUST00000143258.1	655	102aa	Protein coding	-	F7C9H0	CDS 5' incomplete TSL:2
Postn-207	ENSMUST00000145036.2	5223	No protein	Retained intron	-	-	TSL:1
Postn-205	ENSMUST00000127452.1	900	No protein	Retained intron	-	-	TSL:2
Postn-209	ENSMUST00000154157.7	891	No protein	Retained intron	-	-	TSL:3
Postn-208	ENSMUST00000150868.1	624	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Postn-203* transcript,The transcription is shown below

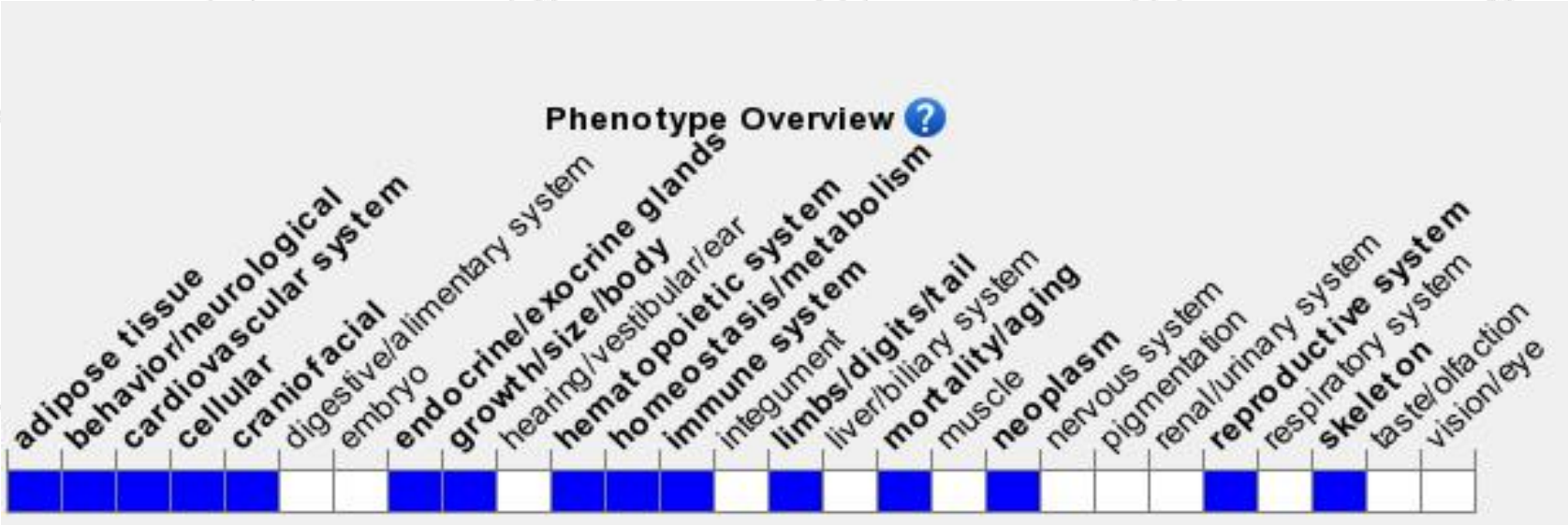


Genomic location distribution



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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