

Peg3 Cas9-CKO Strategy

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Project Overview

Project Name

Peg3

Project type

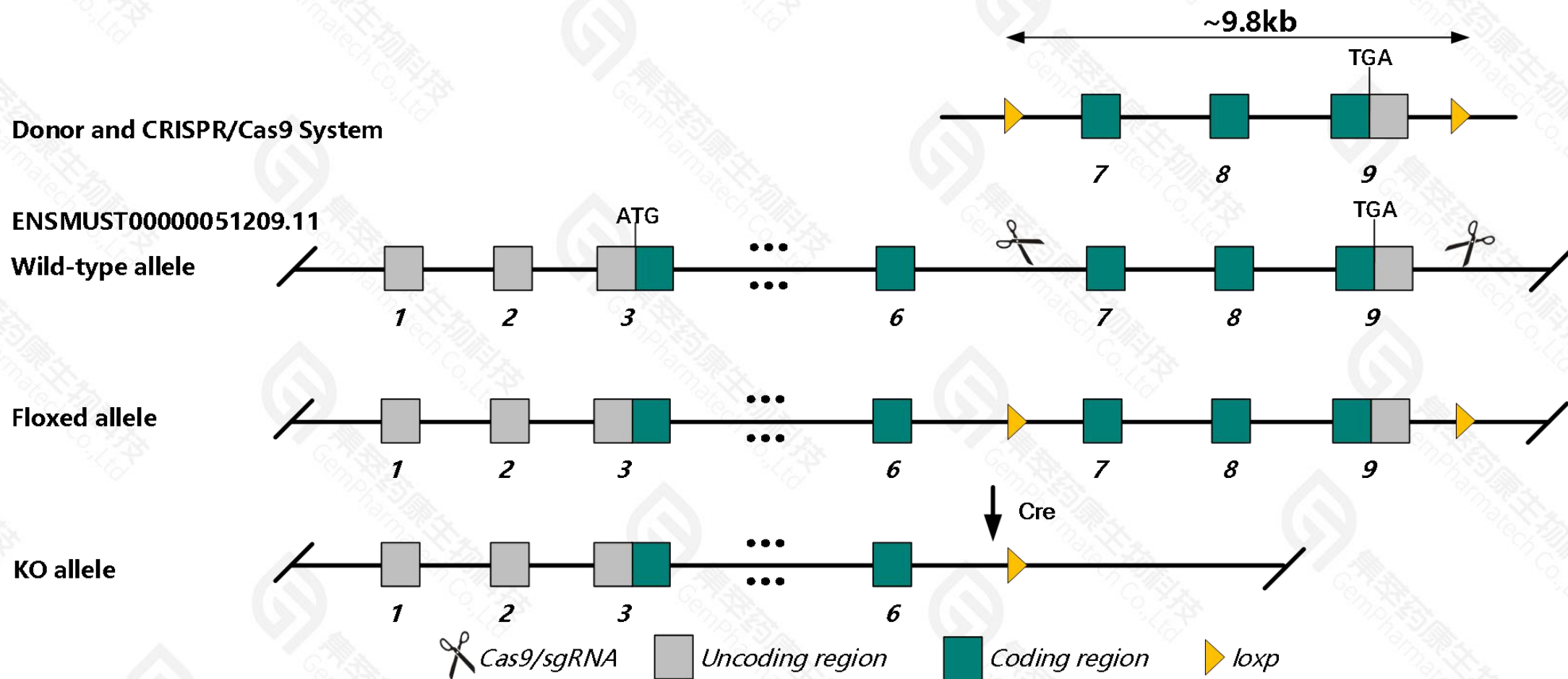
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Peg3* gene. The schematic diagram is as follows:



Technical routes

- The *Peg3* gene has 3 transcripts. According to the structure of *Peg3* gene, exon7-9 of *Peg3-201*(ENSMUST00000051209.11) 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 *Peg3* 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.

- According to the existing MGI data, heterozygous mutant females exhibit growth retardation, impaired maternal behavior and diminished milk ejection, and fewer oxytocin neurons.
- The *Peg3* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Peg3 paternally expressed 3 [*Mus musculus* (house mouse)]

Gene ID: 18616, updated on 20-Jul-2021

Download Datasets

Summary

- Official Symbol

Peg3 provided by MGI
- Official Full Name

paternally expressed 3 provided by MGI
- Primary source

MGI:MGI:104748
- See related

Ensembl:ENSMUSG00000002265
- 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

Pw; End; Gca; Pw1; End4; ASF-1; Gcap4; Zfp10; Zfp102; AL022617; mKIAA0287
- Expression

Biased expression in placenta adult (RPKM 77.8), limb E14.5 (RPKM 49.2) and 12 other tissues [See more](#)
- Orthologs

[human](#) [all](#)
- NEW

Try the new [Gene table](#)
- Try the new [Transcript table](#)

Genomic context

Location: 7 A1; 7 3.89 cM

Exon count: 13

See Peg3 in [Genome Data Viewer](#)

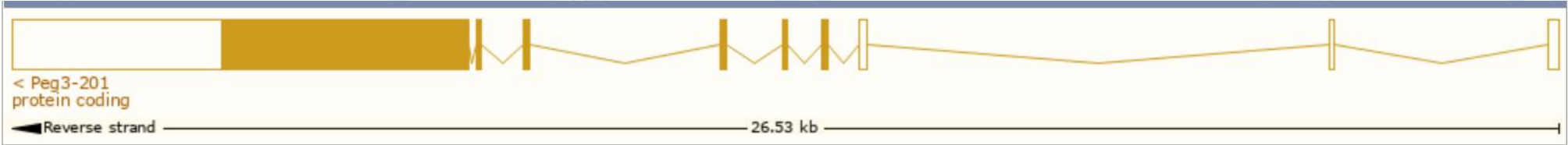
Annotation release	Status	Assembly	Chr	Location
109	current	GRCm39 (GCF_000001635.27)	7	NC_000073.7 (6706891..6733443, complement)
108.20200622	previous assembly	GRCm38.p6 (GCF_000001635.26)	7	NC_000073.6 (6703892..6730462, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	7	NC_000073.5 (6658671..6683130, complement)

Transcript information (Ensembl)

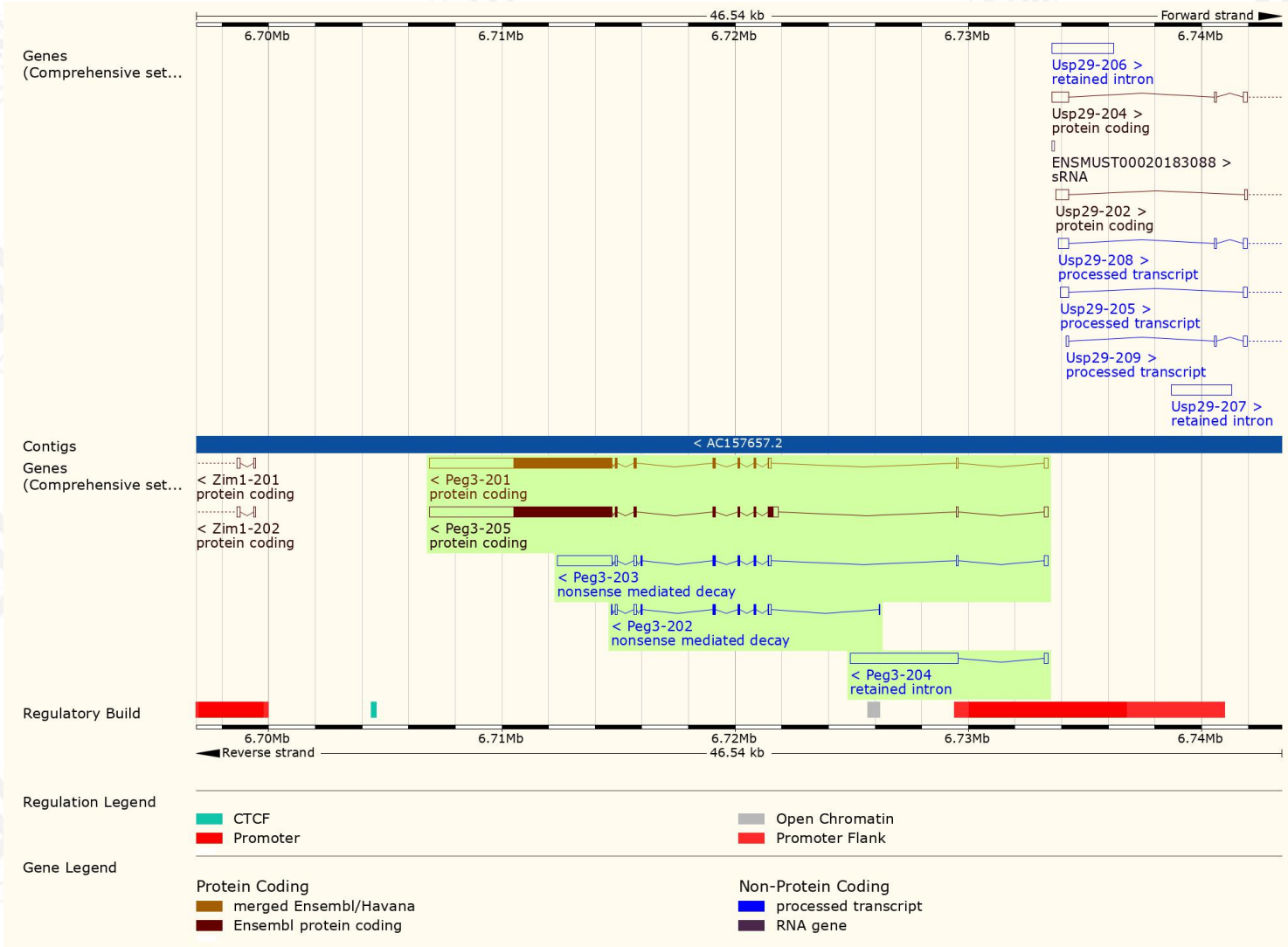
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt Match	Flags
Peg3-201	ENSMUST00000051209.11	8694	1571aa	Protein coding	CCDS20783	Q3URU2-1	GENCODE basic APPRIS P2 TSL:1
Peg3-205	ENSMUST00000239104.2	8986	1632aa	Protein coding	-	A0A5F8MPW9	GENCODE basic APPRIS ALT2
Peg3-203	ENSMUST00000150182.8	3252	116aa	Nonsense mediated decay	-	D6RGA4	TSL:1
Peg3-202	ENSMUST00000143703.2	733	116aa	Nonsense mediated decay	-	D6RGA4	TSL:5
Peg3-204	ENSMUST00000155910.3	4816	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Peg3-201* transcript,the transcription is shown below:



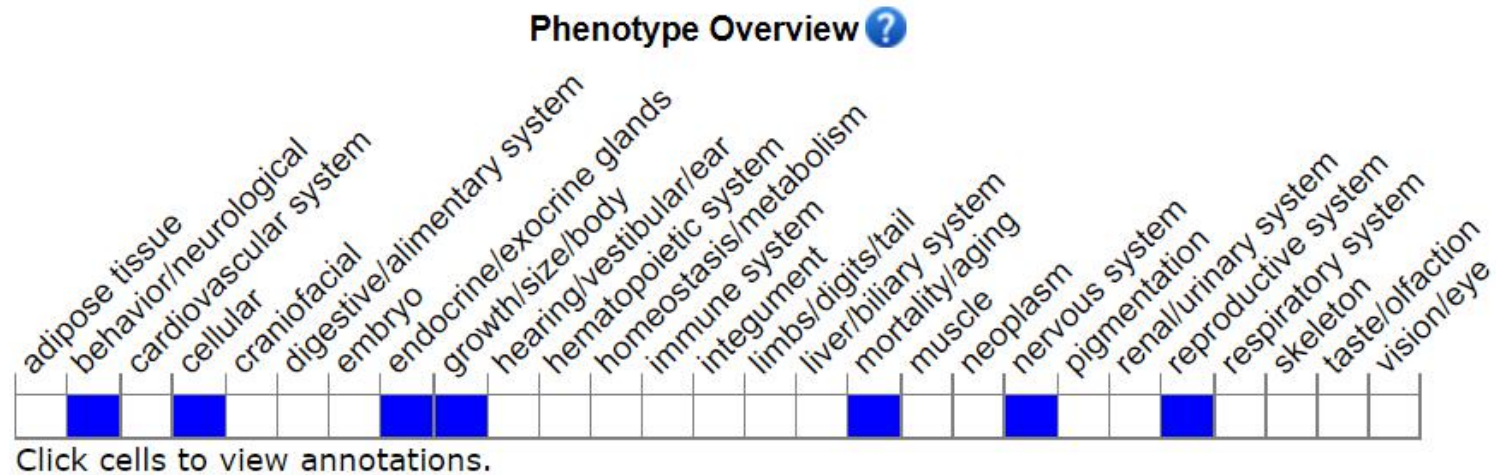
Genomic location distribution



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/>).

Heterozygous mutant females exhibit growth retardation, impaired maternal behavior and diminished milk ejection, and fewer oxytocin neurons.

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