Prok2 Cas9-KO *Strategy*

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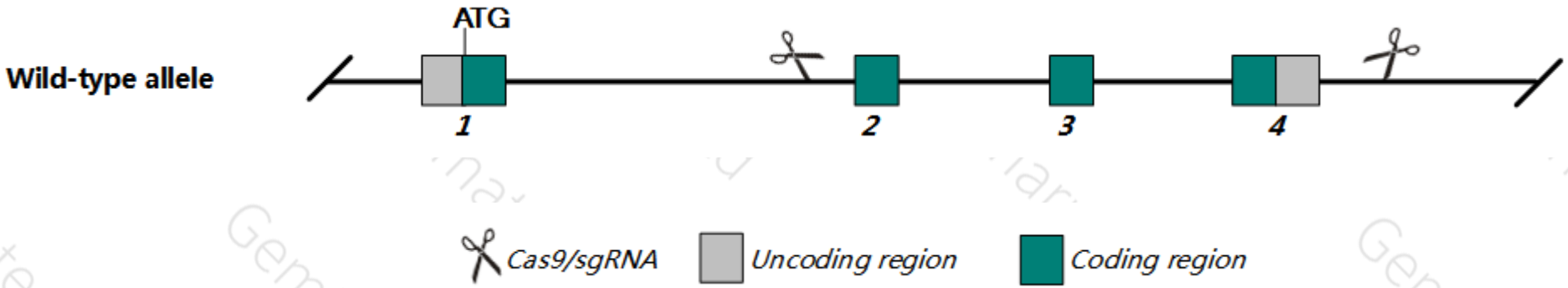
Project Overview

Project Name	***Prok2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prok2* gene. The schematic diagram is as follows:



Technical routes

- The *Prok2* gene has 4 transcriptsAccording to the structure of *Prok2* gene, exon2-4 of *Prok2*-202 transcript is recommended as the knockout region.The region contains most of coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Prok2* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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.

Notice

- According to the existing MGI data，Mice homozygous for a knock-out allele have a significantly reduced olfactory bulb displaying abnormal architecture and accumulation of neuronal progenitors in the rostral migratory stream.
- The KO region contains functional region of the Gm26748 gene.Knockout the region may affect the function of Gm26748 gene
- The *Prok2* gene is located on the Chr6. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information （NCBI）

Prok2 prokineticin 2 [*Mus musculus* (house mouse)]

Gene ID: 50501, updated on 23-Apr-2019

Summary

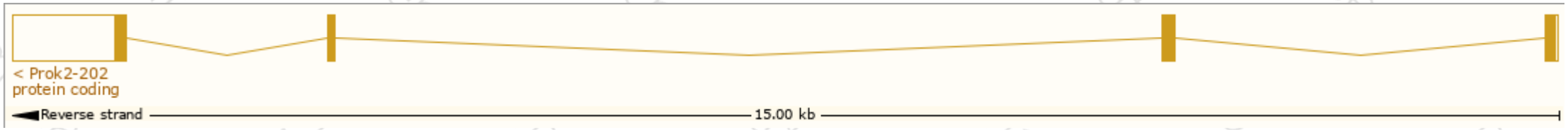
Official Symbol	Prok2 provided by MGI
Official Full Name	prokineticin 2 provided by MGI
Primary source	MGI:MGI:1354178
See related	Ensembl:ENSMUSG00000030069
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Bv8; PK2; Prok1
Expression	Restricted expression toward testis adult (RPKM 10.4) See more
Orthologs	human all

Transcript information（ Ensembl ）

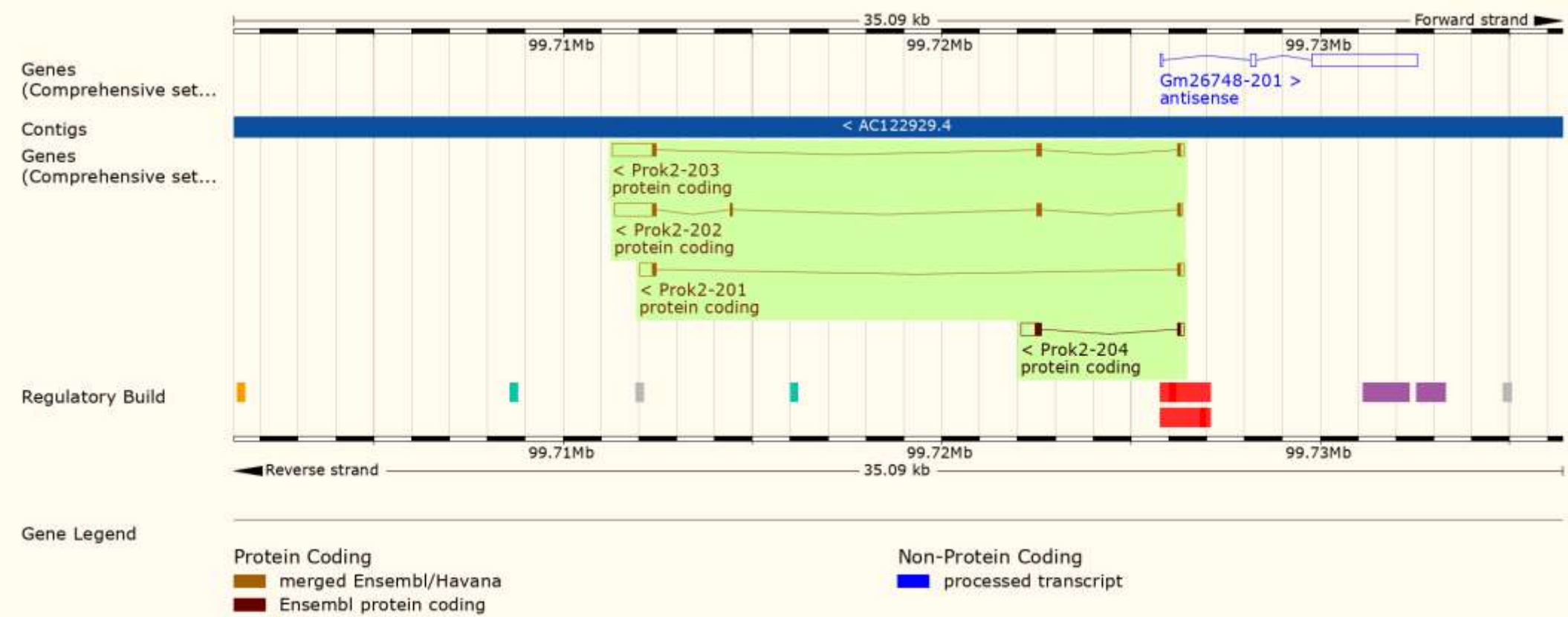
The gene has 4 transcripts, and all transcripts are shown below

Name	Transcript ID ▲	bp	Protein	Biotype	CCDS	UniProt	Flags
Prok2-201	ENSMUST00000008273.7	594	65aa	Protein coding	CCDS51864	G3X8R6	TSL:3 GENCODE basic
Prok2-202	ENSMUST00000032152.13	1423	128aa	Protein coding	CCDS20389	Q14AB2 Q9QXU7	TSL:1 GENCODE basic
Prok2-203	ENSMUST00000101120.10	1450	107aa	Protein coding	CCDS20388	Q9QXU7	TSL:1 GENCODE basic APPRIS P1
Prok2-204	ENSMUST00000203738.1	695	86aa	Protein coding	-	Q9QXU7	TSL:1 GENCODE basic

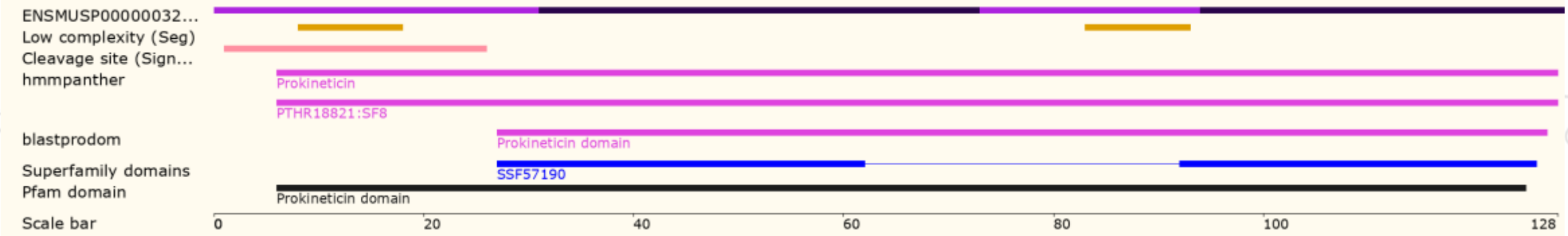
The strategy is based on the design of *Prok2-202* transcript,The transcription is shown below



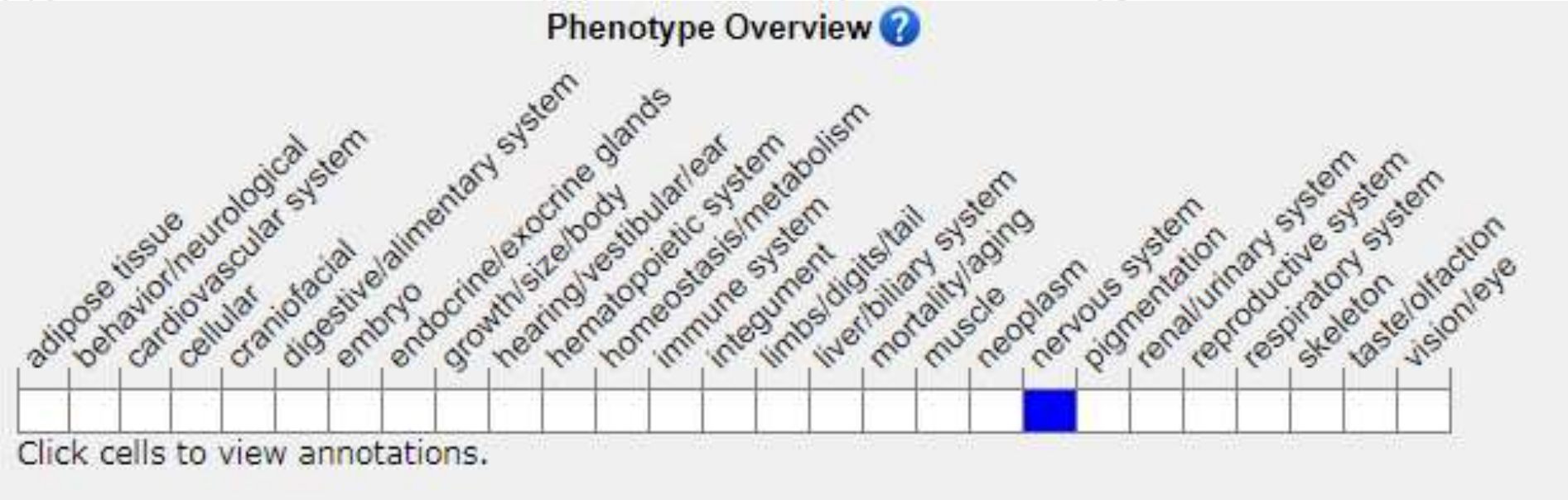
Genomic location (Ensembl)



Protein domain（Ensembl）



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/) .

Mice homozygous for a knock-out allele have a significantly reduced olfactory bulb displaying abnormal architecture and accumulation of neuronal progenitors in the rostral migratory stream.

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

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