

Gprasp1 Cas9-KO Strategy

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Project Overview

Project Name

Gprasp1

Project type

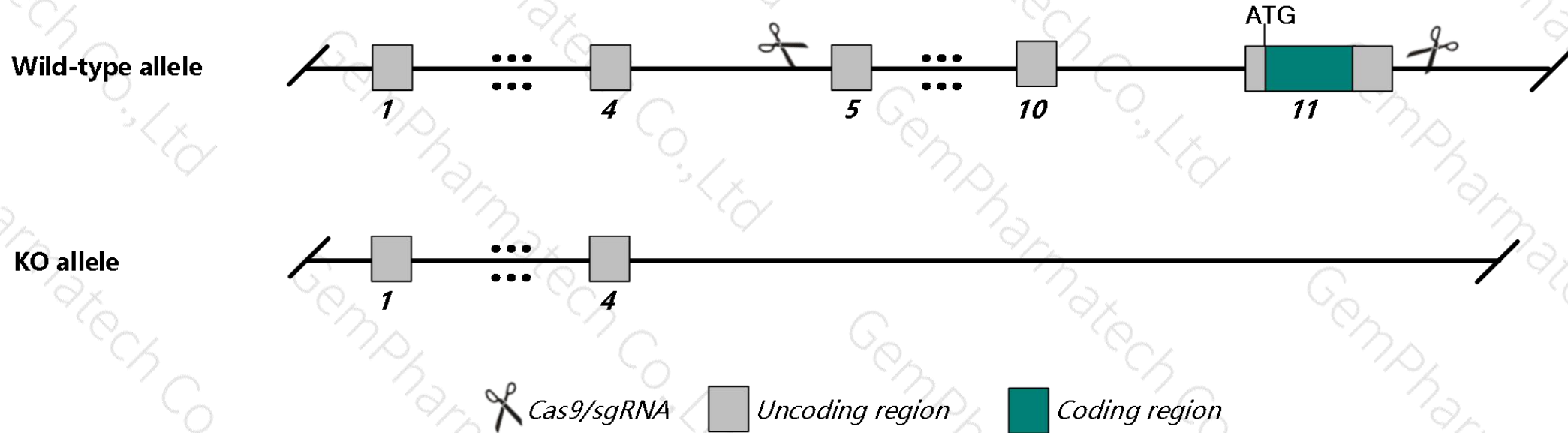
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gprasp1* gene. The schematic diagram is as follows:



- The *Gprasp1* gene has 6 transcripts. According to the structure of *Gprasp1* gene, exon5-exon11 of *Gprasp1-201* (ENSMUST00000113144.7) transcript is recommended as the knockout region. The region contains all 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 *Gprasp1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit impaired behavioral response to cocaine.
- The KO region contains exon1 of *Bhlhb9-205* (Retained intron).
- The *Gprasp1* gene is located on the ChrX. 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)

Gprasp1 G protein-coupled receptor associated sorting protein 1 [*Mus musculus* (house mouse)]

Gene ID: 67298, updated on 12-Aug-2019

Summary

Official Symbol Gprasp1 provided by [MGI](#)
Official Full Name G protein-coupled receptor associated sorting protein 1 provided by [MGI](#)
Primary source [MGI:MGI:1917418](#)
See related [Ensembl:ENSMUSG00000043384](#)
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 GASP; GASP1; C87852; 2210415K24Rik; 3110031O14Rik
Expression Biased expression in CNS E18 (RPKM 73.7), CNS E14 (RPKM 50.7) and 9 other tissues [See more](#)
Orthologs [human](#) [all](#)

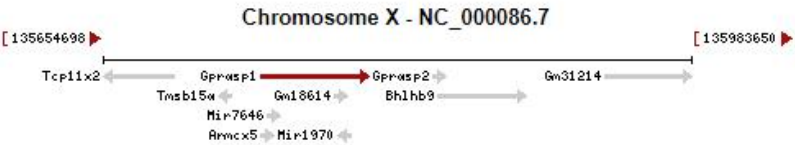
Genomic context

Location: X; X F1

See Gprasp1 in [Genome Data Viewer](#)

Exon count: 12

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	X	NC_000086.7 (135742692..135803468)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	X	NC_000086.6 (132277231..132338007)

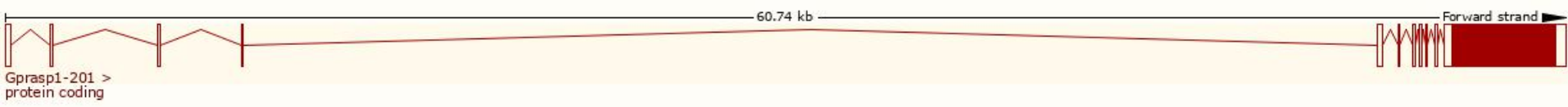


Transcript information (Ensembl)

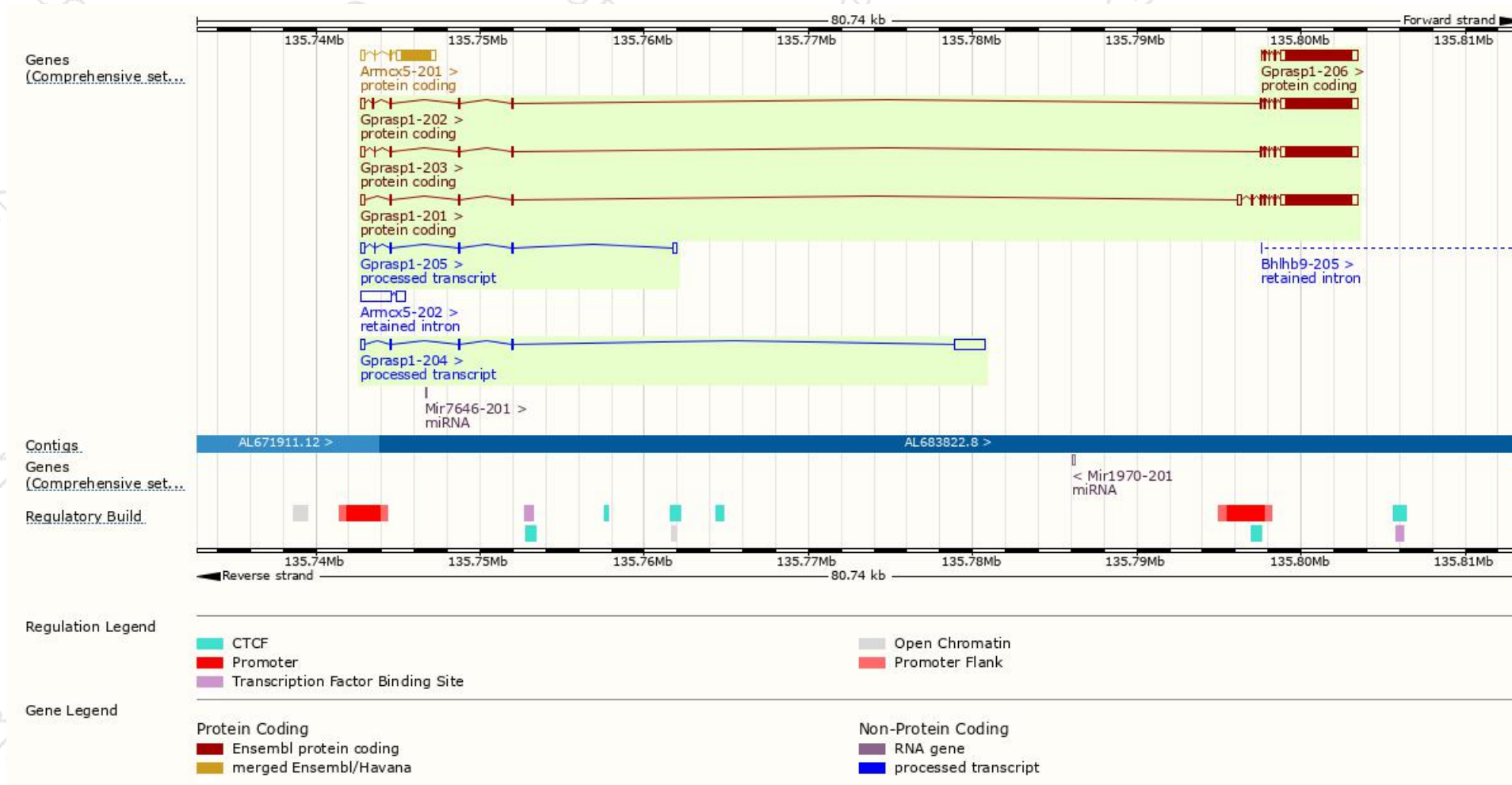
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gprasp1-201	ENSMUST00000113144.7	5843	1347aa	Protein coding	CCDS30409	Q5U4C1	TSL:1 GENCODE basic APPRIS P1
Gprasp1-202	ENSMUST00000113145.7	5640	1347aa	Protein coding	CCDS30409	Q5U4C1	TSL:1 GENCODE basic APPRIS P1
Gprasp1-203	ENSMUST00000113147.7	5611	1347aa	Protein coding	CCDS30409	Q5U4C1	TSL:1 GENCODE basic APPRIS P1
Gprasp1-206	ENSMUST00000166554.1	4993	1347aa	Protein coding	CCDS30409	Q5U4C1	TSL:1 GENCODE basic APPRIS P1
Gprasp1-204	ENSMUST00000143034.1	2361	No protein	Processed transcript	-	-	TSL:5
Gprasp1-205	ENSMUST00000149595.7	837	No protein	Processed transcript	-	-	TSL:1

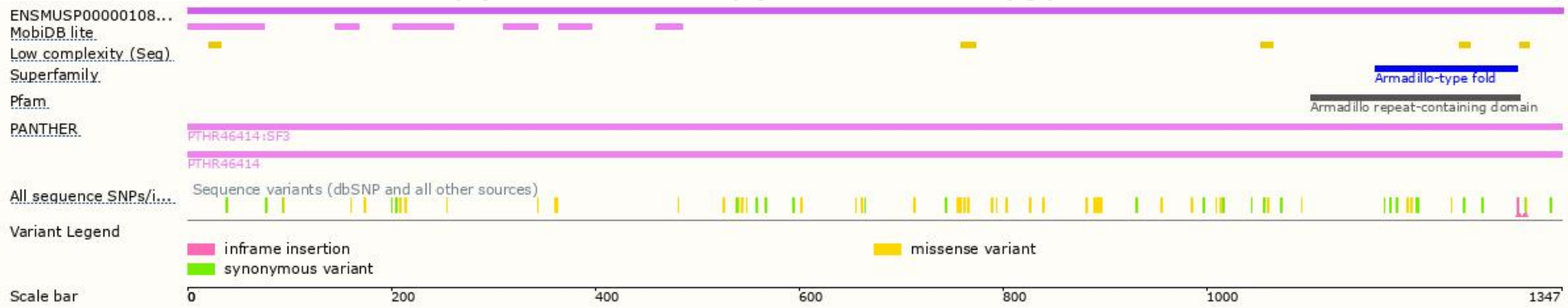
The strategy is based on the design of *Gprasp1-201* transcript,The transcription is shown below



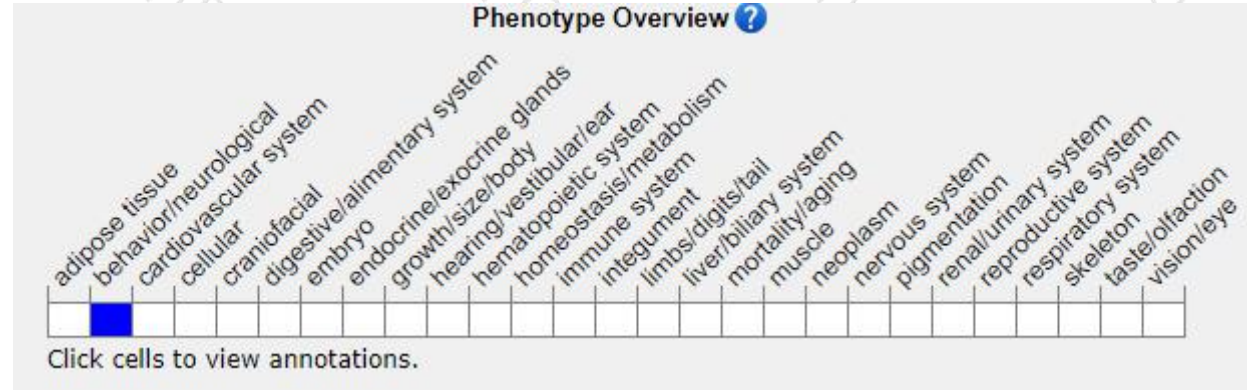
Genomic location distribution



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/>).

Mice homozygous for a knock-out allele exhibit impaired behavioral response to cocaine.

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

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