Grasp Cas9-KO *Strategy*

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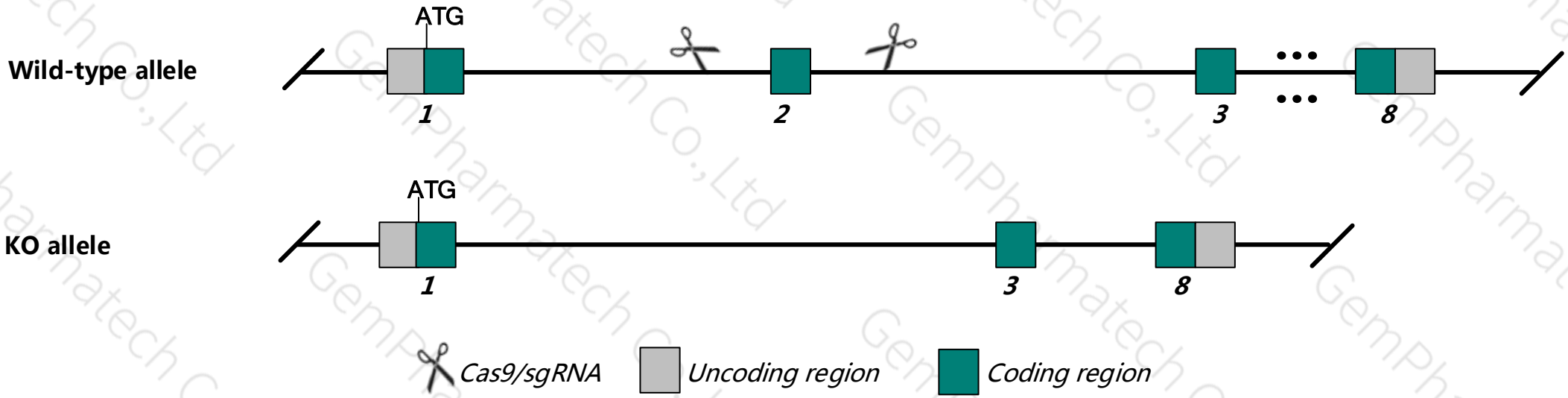
Project Overview

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

Knockout strategy

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



Technical routes

- The *Grasp* gene has 1 transcript.According to the structure of *Grasp* gene, exon2 of *Grasp*-201 (ENSMUST00000000543.5)transcript is recommended as the knockout region.The region contains 50bp coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Grasp* 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 targeted null mutations develop and behave normally under ordinary conditions but display a marked reduction in sensitivity to acute morphine responses and impaired adaptive responses to morphine and cocaine.
- The KO region contains regulation functional region of the *A330009N23Rik* gene.Knockout the region may affect the function of *A330009N23Rik* gene.
- The *Grasp* gene is located on the Chr15. 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）

集萃药康 GemPharmatech

Grasp GRP1 (general receptor for phosphoinositides 1)-associated scaffold protein [*Mus musculus* (house mouse)]

Gene ID: 56149, updated on 12-Aug-2019

Summary

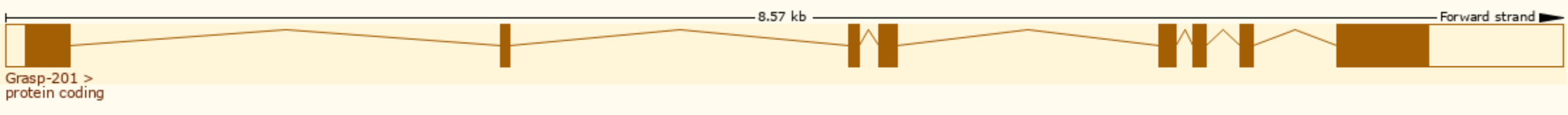
Official Symbol	Grasp provided by MGI
Official Full Name	GRP1 (general receptor for phosphoinositides 1)-associated scaffold protein provided by MGI
Primary source	MGI:MGI:1860303
See related	Ensembl:ENSMUSG00000000531
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	tamalin
Expression	Broad expression in adrenal adult (RPKM 19.3), ovary adult (RPKM 17.4) and 22 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

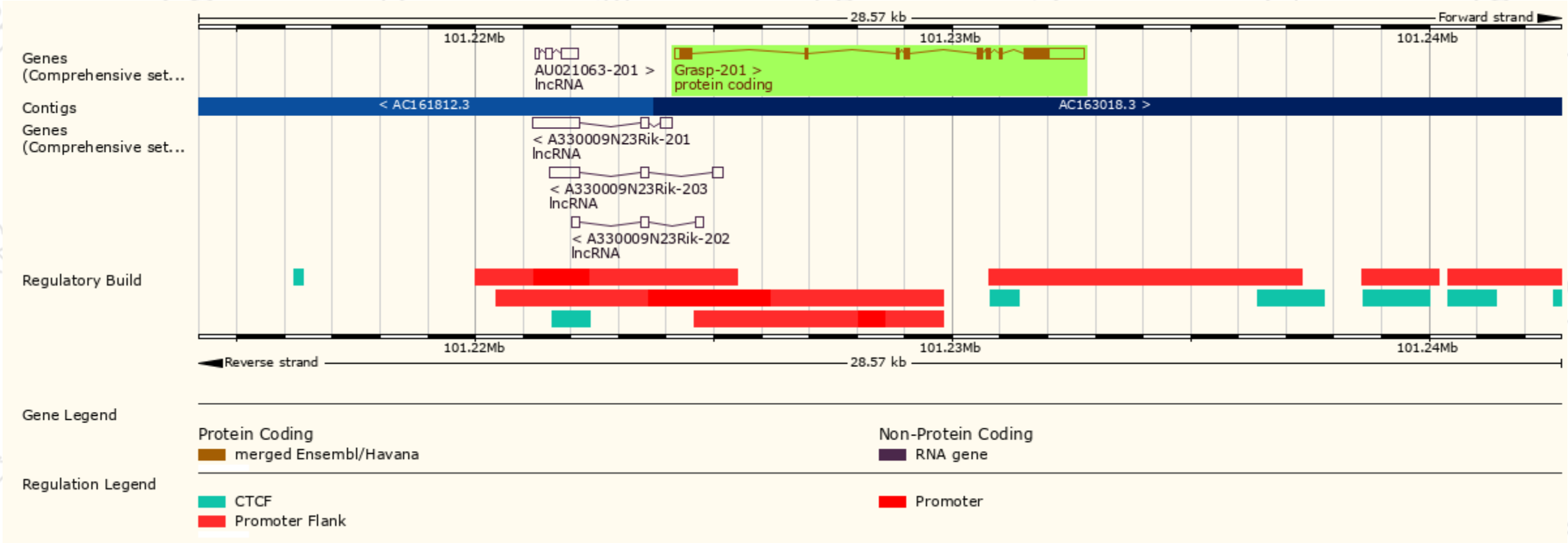
The gene has 1 transcript, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Grasp-201	ENSMUST00000000543.5	2033	392aa	Protein coding	CCDS27847	Q9JJA9	TSL:1 GENCODE basic APPRIS P1

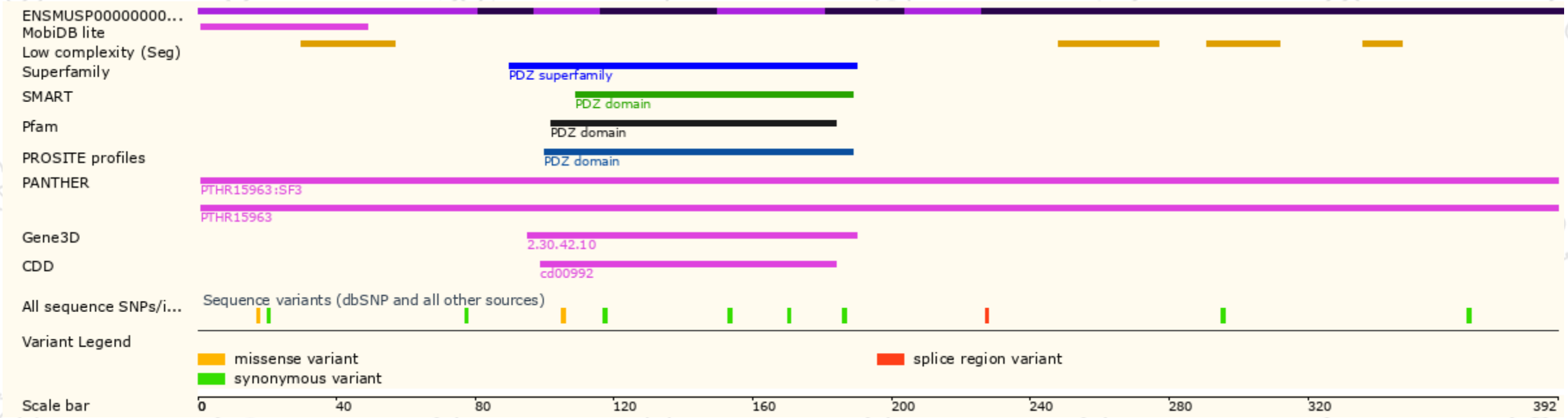
The strategy is based on the design of *Grasp-201* transcript, the transcription is shown below:



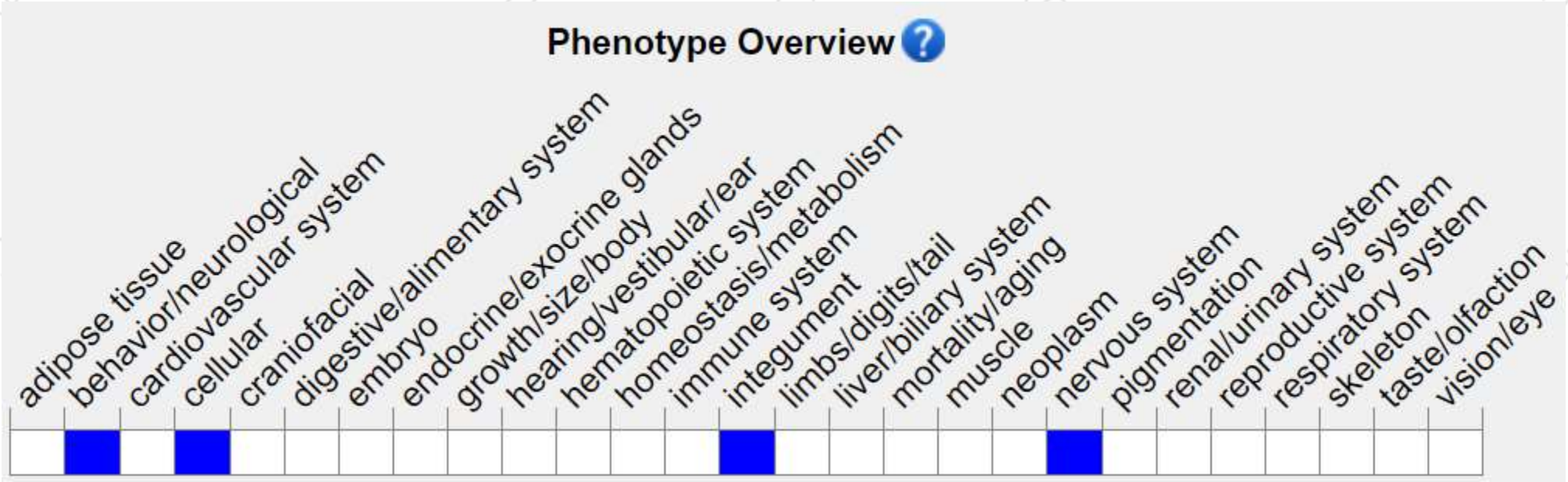
Genomic location (Ensembl)



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/) .

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

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