# *Gabarapl1* Cas9-CKO *Strategy*

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**Design Date:**       **2019-10-8**

# Project Overview

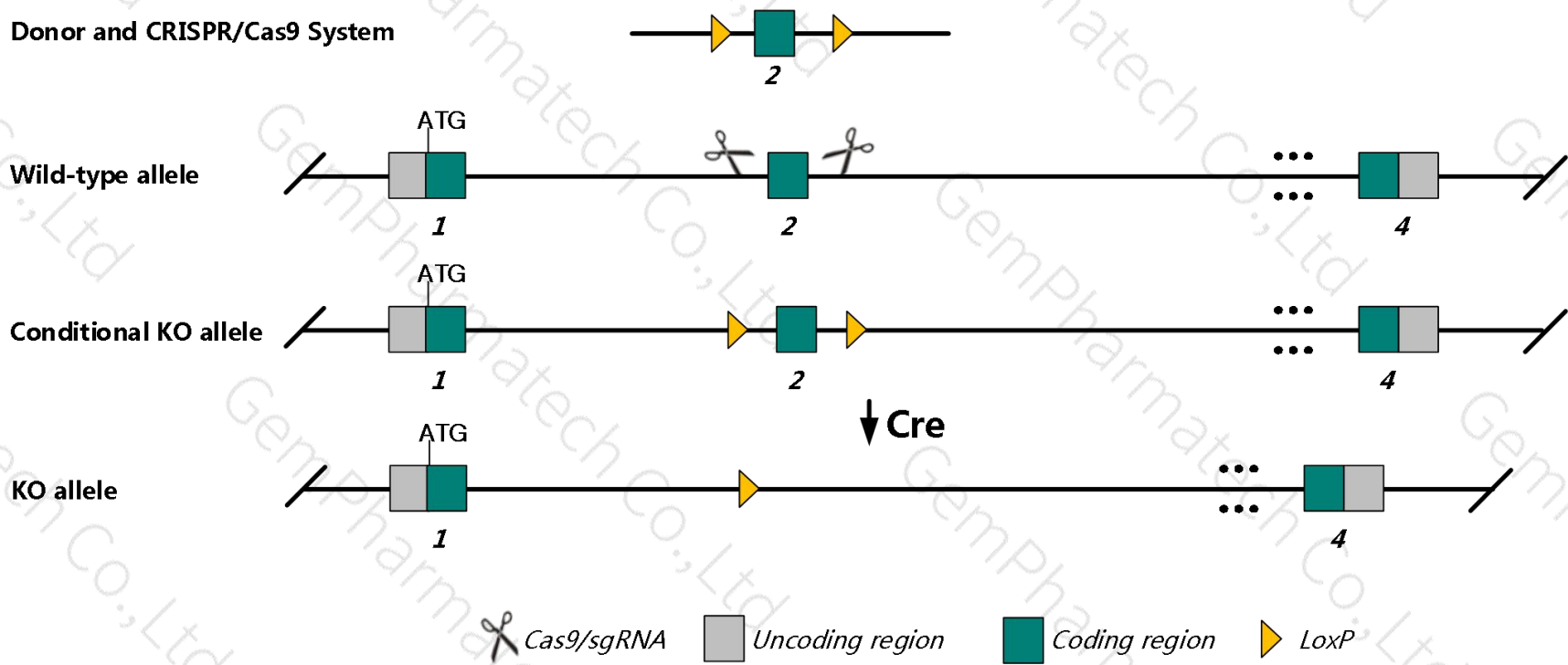| | |
|---|---|
| **Project Name** | *Gabarapl1* |
| **Project type** | **Cas9-CKO** |
| **Strain background** | **C57BL/6JGpt** |

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gabarapl1* gene. The schematic diagram is as follows:

# Technical routes

> The *Gabarapl1* gene has 4 transcripts.According to the structure of *Gabarapl1* gene, exon2 of *Gabarapl1*-201 transcript is recommended as the knockout region.The region contains 79bp coding sequence.Knock out the region will result in disruption of protein function.

> In this project we use CRISPR/Cas9 technology to modify *Gabarapl1* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed.Cas9, gRNA 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 or cell types.

# Notice

➢ The *Gabarapl1* 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 biological processes, all risk of the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

# Gene information（NCBI）

## Gabarapl1   gamma-aminobutyric acid (GABA) A receptor-associated protein-like 1 [ *Mus musculus* (house mouse) ]
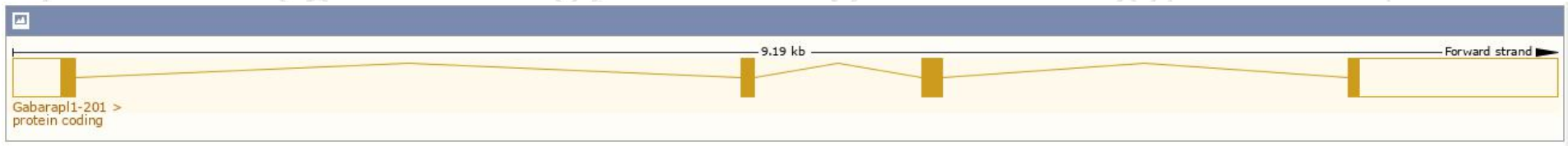
Gene ID: 57436, updated on 3-Sep-2019

### ▲ Summary

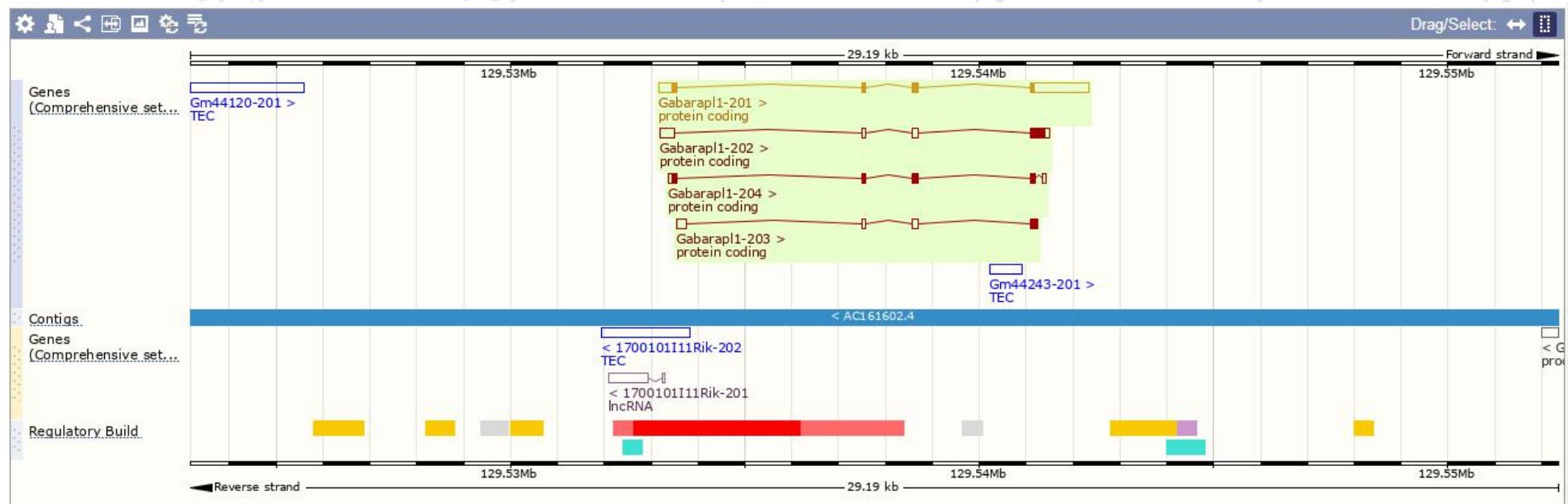| | |
|---|---|
| **Official Symbol** | Gabarapl1 provided by MGI |
| **Official Full Name** | gamma-aminobutyric acid (GABA) A receptor-associated protein-like 1 provided by MGI |
| **Primary source** | MGI:MGI:1914980 |
| **See related** | Ensembl:ENSMUSG00000030161 |
| **Gene type** | protein coding |
| **RefSeq status** | PROVISIONAL |
| **Organism** | Mus musculus |
| **Lineage** | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| **Also known as** | GEC1; Apg8l; Atg8l; AI196471; MNCb-0091; 3110025G09Rik; 9130422N19Rik |
| **Expression** | Broad expression in kidney adult (RPKM 281.6), cortex adult (RPKM 138.5) and 21 other tissues See more |
| **Orthologs** | human   all |

# Transcript information（Ensembl）

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

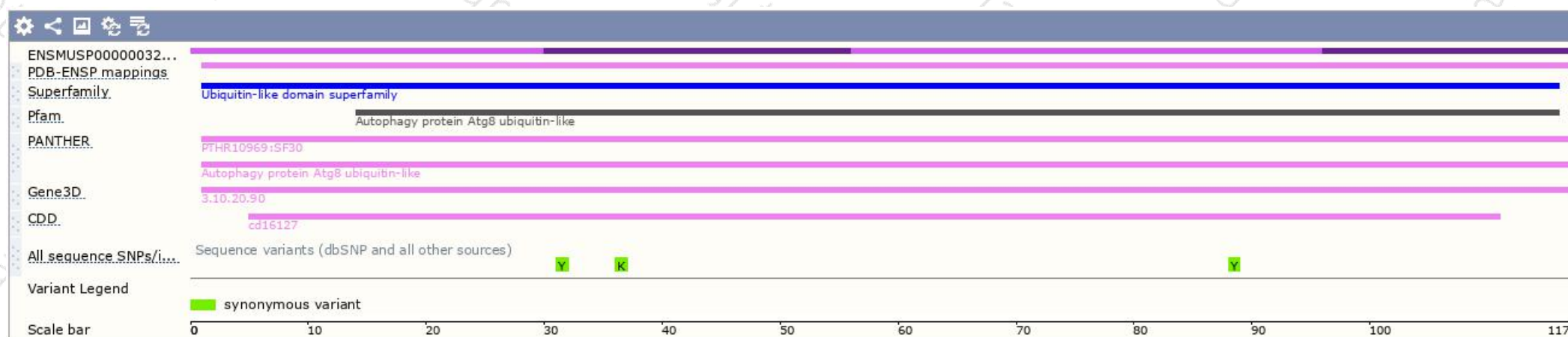| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|------|--------------|-----|---------|---------|------|---------|-------|
| Gabarapl1-201 | ENSMUST00000032264.8 | 1820 | 117aa | Protein coding | CCDS51923 | Q8R3R8 | TSL:1  GENCODE basic  APPRIS P1 |
| Gabarapl1-204 | ENSMUST00000204956.1 | 539 | 117aa | Protein coding | CCDS51923 | Q8R3R8 | TSL:3  GENCODE basic  APPRIS P1 |
| Gabarapl1-202 | ENSMUST00000204487.2 | 902 | 97aa | Protein coding | - | A0A0N4SVF3 | TSL:1  GENCODE basic |
| Gabarapl1-203 | ENSMUST00000204639.1 | 527 | 47aa | Protein coding | - | A0A0N4SUS3 | CDS 3' incomplete  TSL:2 |

The strategy is based on the design of *Gabarapl1*-201 transcript,The transcription is shown below

# Genomic location distribution

# Protein domain



| | | |
|---|---|---|
| ENSMUSP00000032... | | |
| PDB-ENSP mappings | | |
| Superfamily | Ubiquitin-like domain superfamily | |
| Pfam | Autophagy protein Atg8 ubiquitin-like | |
| PANTHER | PTHR10969:SF30 | |
| | Autophagy protein Atg8 ubiquitin-like | |
| Gene3D | 3.10.20.90 | |
| CDD | cd16127 | |
| All sequence SNPs/i.... | Sequence variants (dbSNP and all other sources) | |
| Variant Legend | | |
| | synonymous variant | |
| Scale bar | 0  10  20  30  40  50  60  70  80  90  100  117 | |

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