

# ***Gast Cas9-CKO Strategy***

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# Project Overview

**Project Name**

*Gast*

**Project type**

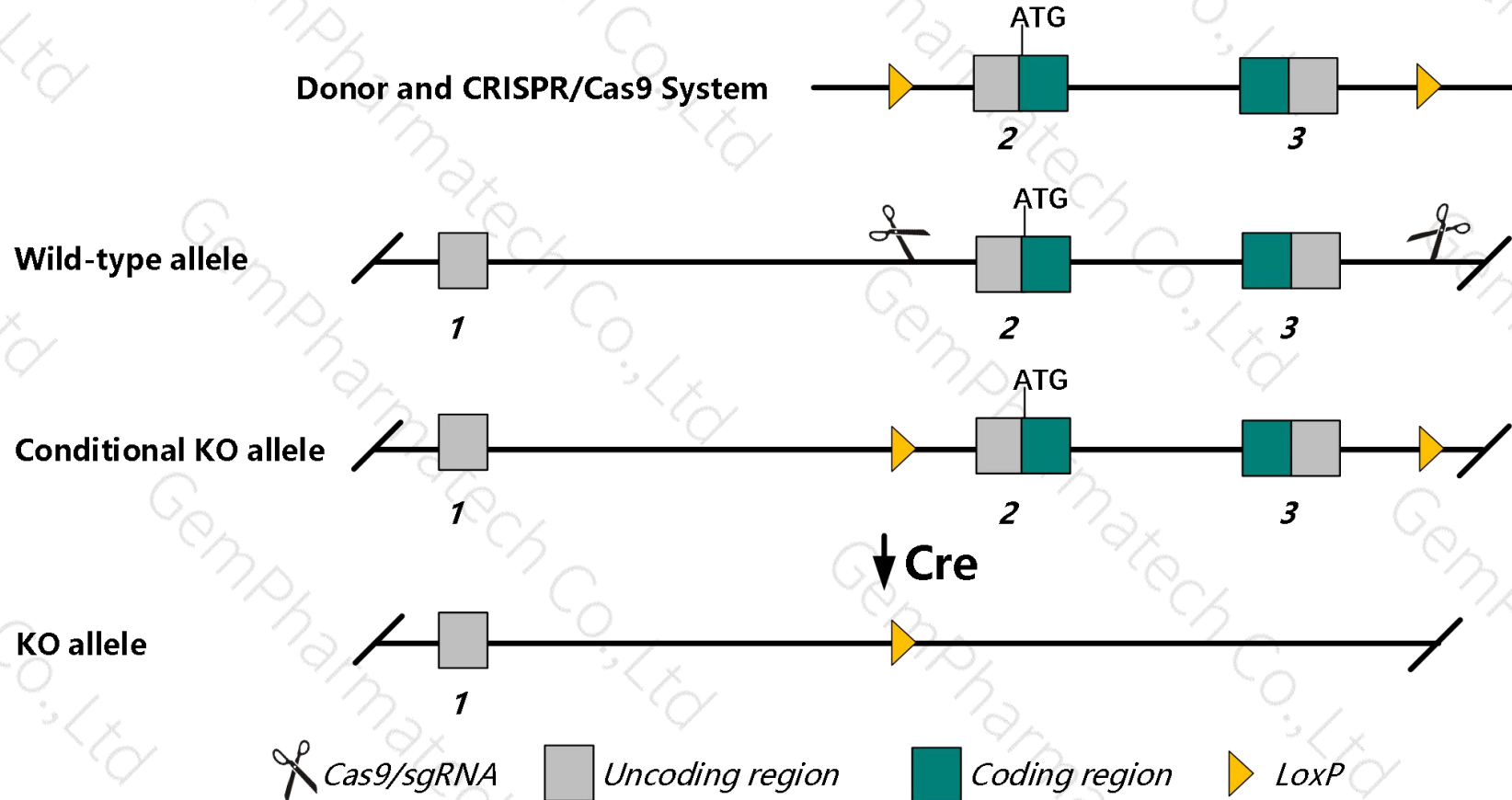
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

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



- The *Gast* gene has 1 transcript. According to the structure of *Gast* gene, exon2-exon3 of *Gast-201* (ENSMUST00000017309.1) 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 *Gast* 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, Homozygotes for targeted null alleles exhibit an absence of gastric acid secretion, alterations in gastric architecture, fasting hypoglycemia with impaired glucagon response, and increased susceptibility to azoxymethane-induced colon tumors.
- The *Gast* gene is located on the Chr11. 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)

## Gast gastrin [ *Mus musculus* (house mouse) ]

Gene ID: 14459, updated on 12-Aug-2019

### Summary

<b>Official Symbol</b>	Gast provided by <a href="#">MGI</a>
<b>Official Full Name</b>	gastrin provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:104768</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000017165</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	REVIEWED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	GAS
<b>Summary</b>	This gene encodes the peptide hormone gastrin, which stimulates gastric acid secretion, proliferation, cell migration and angiogenesis, as well as inhibits apoptosis. The encoded preproprotein undergoes proteolytic processing to generate multiple gastrin peptides differing in size. Mice lacking the encoded protein exhibit a decrease in the number of parietal cells, achlorohyria and a decrease in the colonic proliferation. [provided by RefSeq, Nov 2015]
<b>Expression</b>	Restricted expression toward stomach adult (RPKM 365.6) <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

### Genomic context

**Location:** 11 D; 11 63.46 cM

See Gast in [Genome Data Viewer](#)

**Exon count:** 3

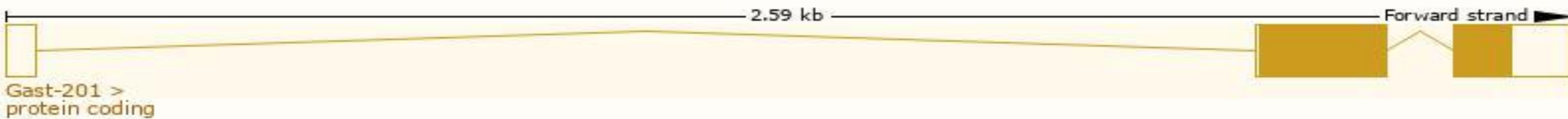
Annotation release	Status	Assembly	Chr	Location
<a href="#">108</a>	current	GRCm38.p6 ( <a href="#">GCF_000001635.26</a> )	11	NC_000077.6 (100334407..100336997)
Build 37.2	previous assembly	MGSCv37 ( <a href="#">GCF_000001635.18</a> )	11	NC_000077.5 (100195726..100198310)

# Transcript information (Ensembl)

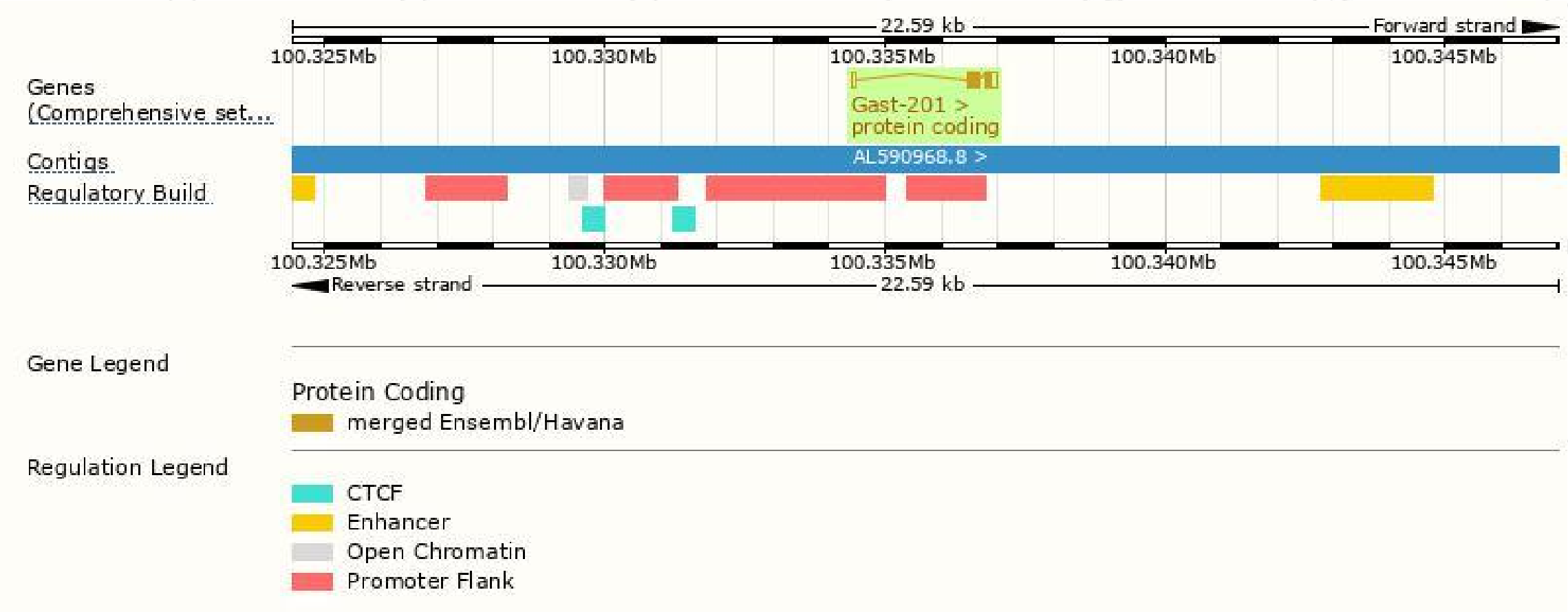
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
<b>Gast-201</b>	<a href="#">ENSMUST00000017309.1</a>	460	<a href="#">101aa</a>	<a href="#">Protein coding</a>	<a href="#">CCDS25418</a>	<a href="#">P48757</a>	TSL:1 GENCODE basic APPRIS P1

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



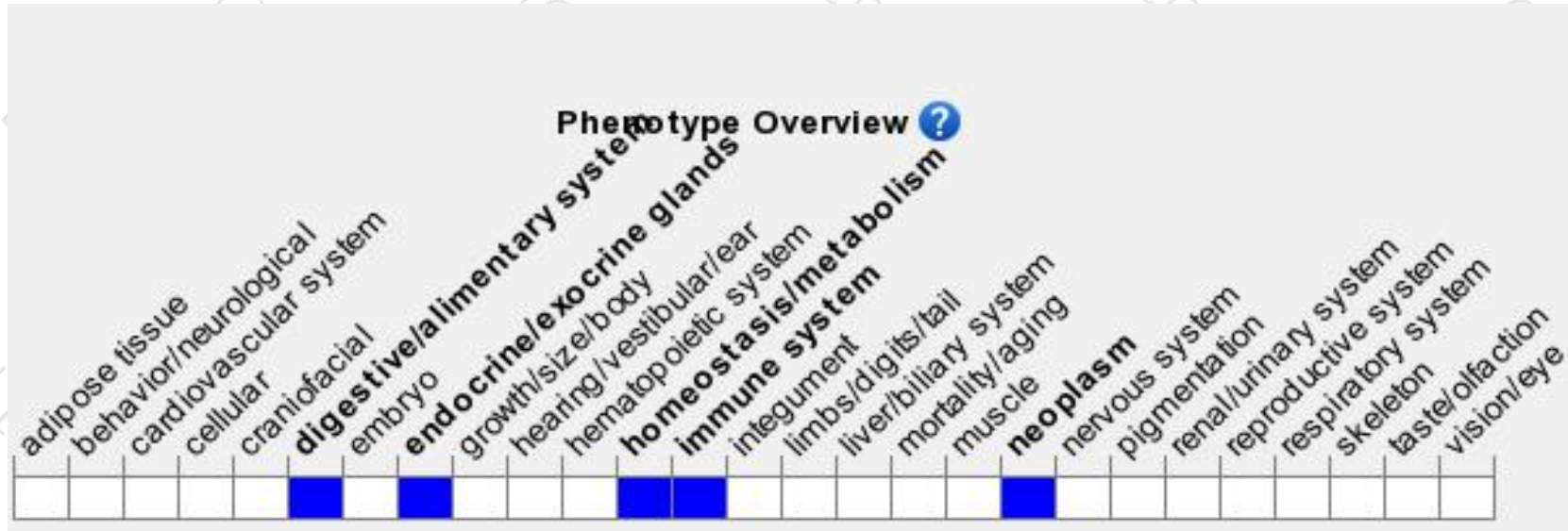
# Genomic location distribution



# 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/>).*

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

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