Slc9a2 Cas9-KO Strategy

Designer: **Daohua Xu**

Reviewer：   **Huimin Su**

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Project Overview

Project Name	*Slc9a2*
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc9a2* gene. The schematic diagram is as follows:

Technical routes

➢ The *Slc9a2* gene has 3 transcripts. According to the structure of *Slc9a2* gene, exon2-exon3 of *Slc9a2-201*
  (ENSMUST00000027231.12) transcript is recommended as the knockout region.The region contains 715bp coding sequence.
  Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc9a2* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➤ According to the existing MGI data,Gastric acid secretion is impaired in homozygous mutant mice. The

gastric mucosa becomes inflamed and exhibits an altered cellular composition. Mutant mice do not breed well.

➤ The *Slc9a2* gene is located on the Chr1. 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）

Slc9a2 solute carrier family 9 (sodium/hydrogen exchanger), member 2 [Mus musculus (house mouse)]

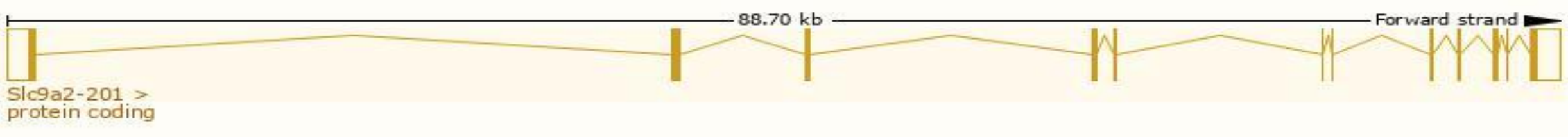Gene ID: 226999, updated on 3-Feb-2019

▲ Summary

Official Symbol	Slc9a2 provided by MGI
Official Full Name	solute carrier family 9 (sodium/hydrogen exchanger), member 2 provided by MGI
Primary source	MGI:MGI:105075
See related	Ensembl:ENSMUSG00000026062
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	2210416H12Rik, 4932415O19Rik, AV333884, NHE2
Expression	Biased expression in colon adult (RPKM 88.7), small intestine adult (RPKM 52.2) and 5 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags		
Slc9a2-201	ENSMUST00000027231.12	5019	814aa	Protein coding	CCDS14914	Q3ZAS0	TSL:1	GENCODE basic	APPRIS P1
Slc9a2-203	ENSMUST00000192345.1	2507	336aa	Protein coding	-	Q3TM63	TSL:1	GENCODE basic	
Slc9a2-202	ENSMUST00000192294.1	856	No protein	Retained intron	-	-	TSL:5		

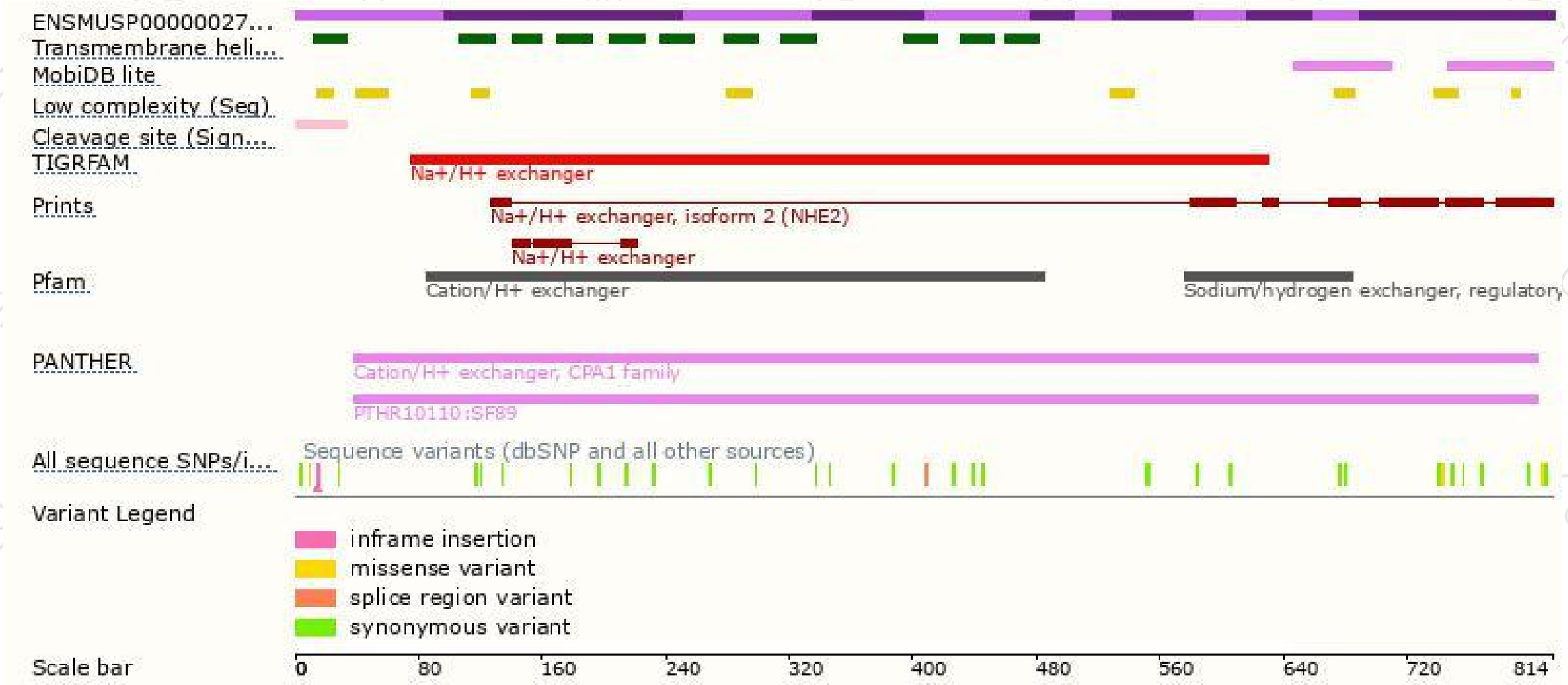The strategy is based on the design of *Slc9a2-201* transcript,The transcription is shown below
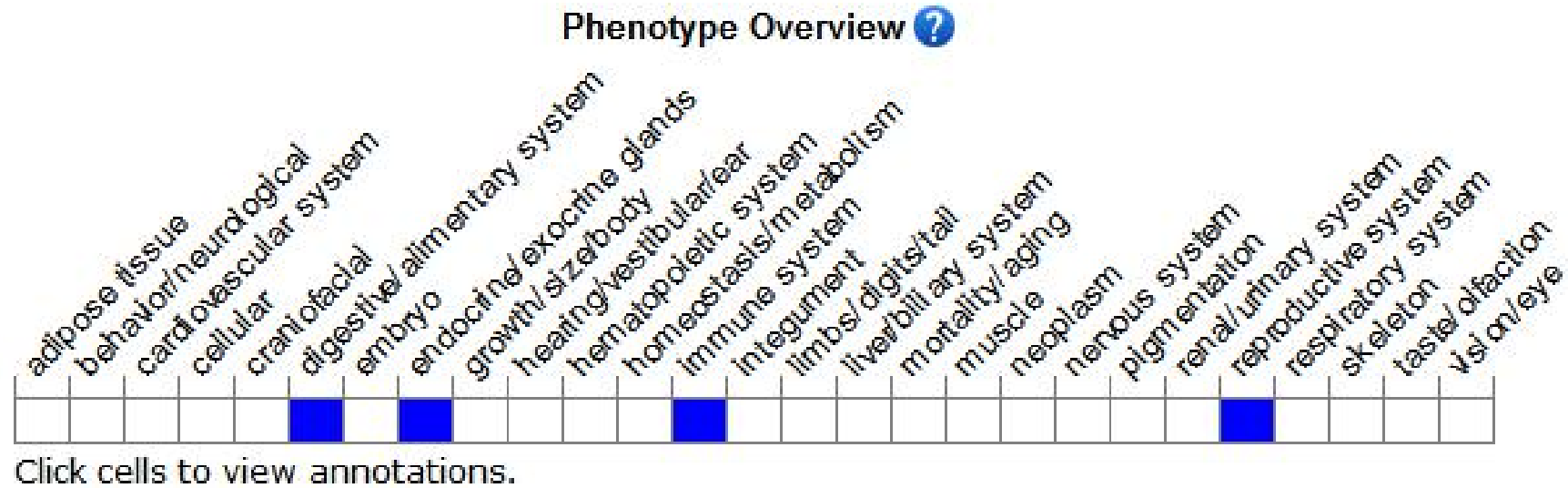
Genomic location distribution

Protein domain

Scale bar: 0, 80, 160, 240, 320, 400, 480, 560, 640, 720, 814

Rows:
- ENSMUSP00000027...
- Transmembrane heli...
- MobiDB lite
- Low complexity (Seg)
- Cleavage site (Sign...)
- TIGRFAM — Na+/H+ exchanger
- Prints — Na+/H+ exchanger, isoform 2 (NHE2); Na+/H+ exchanger
- Pfam — Cation/H+ exchanger; Sodium/hydrogen exchanger, regulatory
- PANTHER — Cation/H+ exchanger, CPA1 family; PTHR10110:SF89
- All sequence SNPs/i... — Sequence variants (dbSNP and all other sources)

Variant Legend
- inframe insertion
- missense variant
- splice region variant
- synonymous variant

江苏集萃药康生物科技股份有限公司　　　　GemPharmatech Co., Ltd.　　　400-9660890

Mouse phenotype description(MGI)

Phenotype Overview

Click cells to view annotations.

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

According to the existing MGI data,Gastric acid secretion is impaired in homozygous mutant mice. The gastric mucosa becomes inflamed and exhibits an altered cellular composition. Mutant mice do not breed well.

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

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GemPharmatech Co.,Ltd