Spink1 Cas9-KO Strategy

Designer: Huimin Su

Reviewer: Ruiuri Zhang

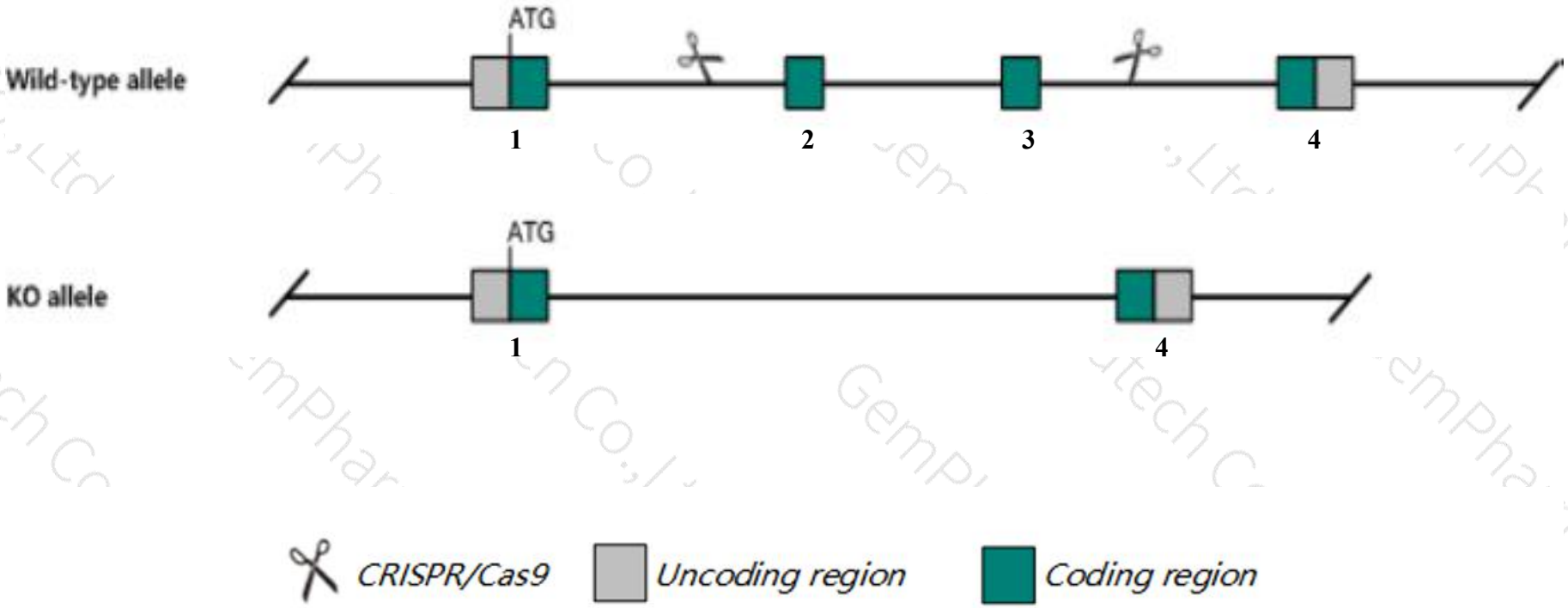
Design Date: 2020-7-20

Project Overview

Project Name	***Spink1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Spink1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Spink1* gene has 1 transcript. According to the structure of *Spink1* gene, exon2-exon3 of *Spink1-201*(ENSMUST00000025381.3) transcript is recommended as the knockout region.The region contains 142bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Spink1* gene. The brief process is as follows: CRISPR/Cas9 system 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 a disruption in this gene results in postnatal lethality, growth retardation, dehydration, autophagic degeneration of acinar cells resulting in pancreas trophy, small intestine degeneration, and a small spleen.

➢ The *Spink1* gene is located on the Chr18. 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

Spink1 serine peptidase inhibitor, Kazal type 1 [*Mus musculus* (house mouse)]

Gene ID: 20730, updated on 26-Jun-2020

Summary

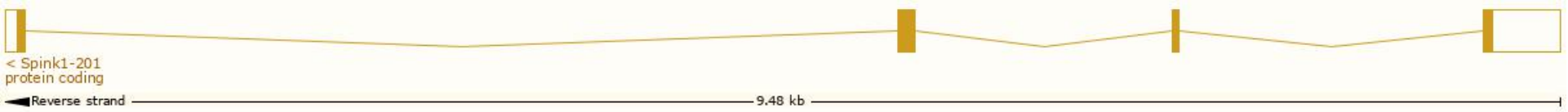
Official Symbol	Spink1 provided by MGI
Official Full Name	serine peptidase inhibitor, Kazal type 1 provided by MGI
Primary source	MGI:MGI:106202
See related	Ensembl:ENSMUSG00000024503
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	p12; Spink3
Expression	Biased expression in kidney adult (RPKM 309.1), placenta adult (RPKM 259.9) and 7 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

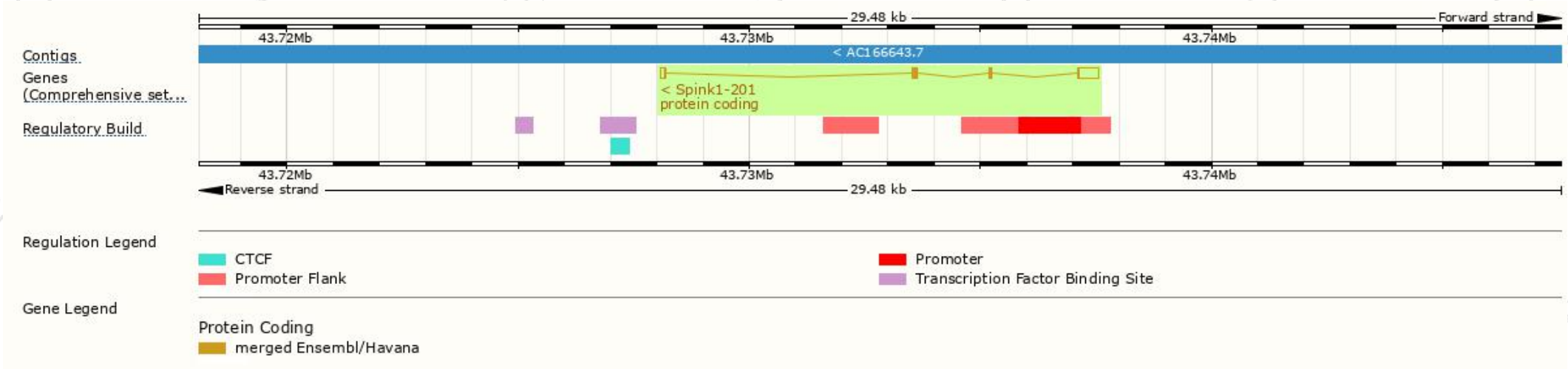
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein ▲	Biotype	CCDS	UniProt	Flags
Spink1-201	ENSMUST00000025381.3	729	80aa	Protein coding	CCDS37803	P09036	TSL:1 GENCODE basic APPRIS P1

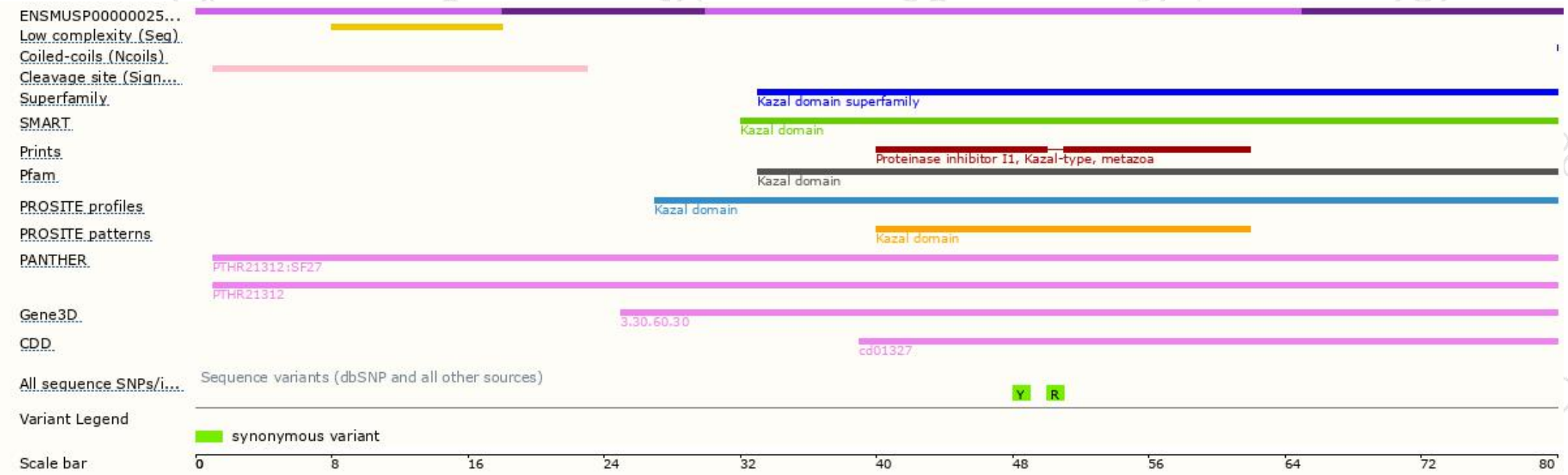
The strategy is based on the design of *Spink1-201* transcript,the transcription is shown below:



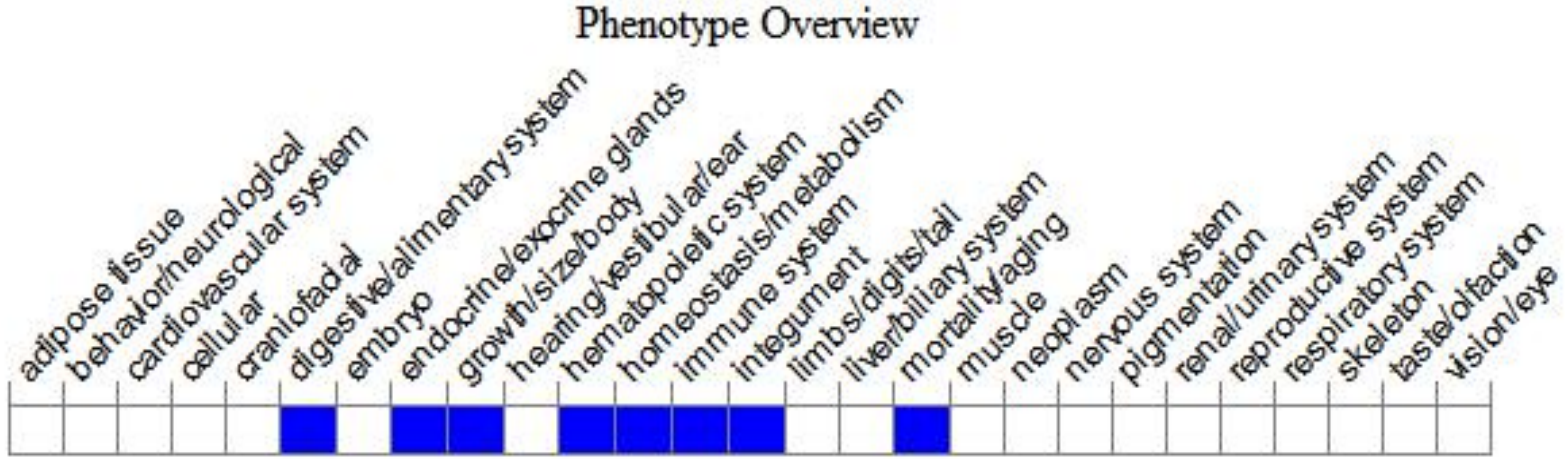
Genomic location distribution



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/).

According to the existing MGI data,mice homozygous for a disruption in this gene results in postnatal lethality, growth retardation, dehydration, autophagic degeneration of acinar cells resulting in pancreas trophy, small intestine degeneration, and a small spleen.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd