Gopc Cas9-KO Strategy

Designer: Huimin Su

Reviewer: Ruirui Zhang

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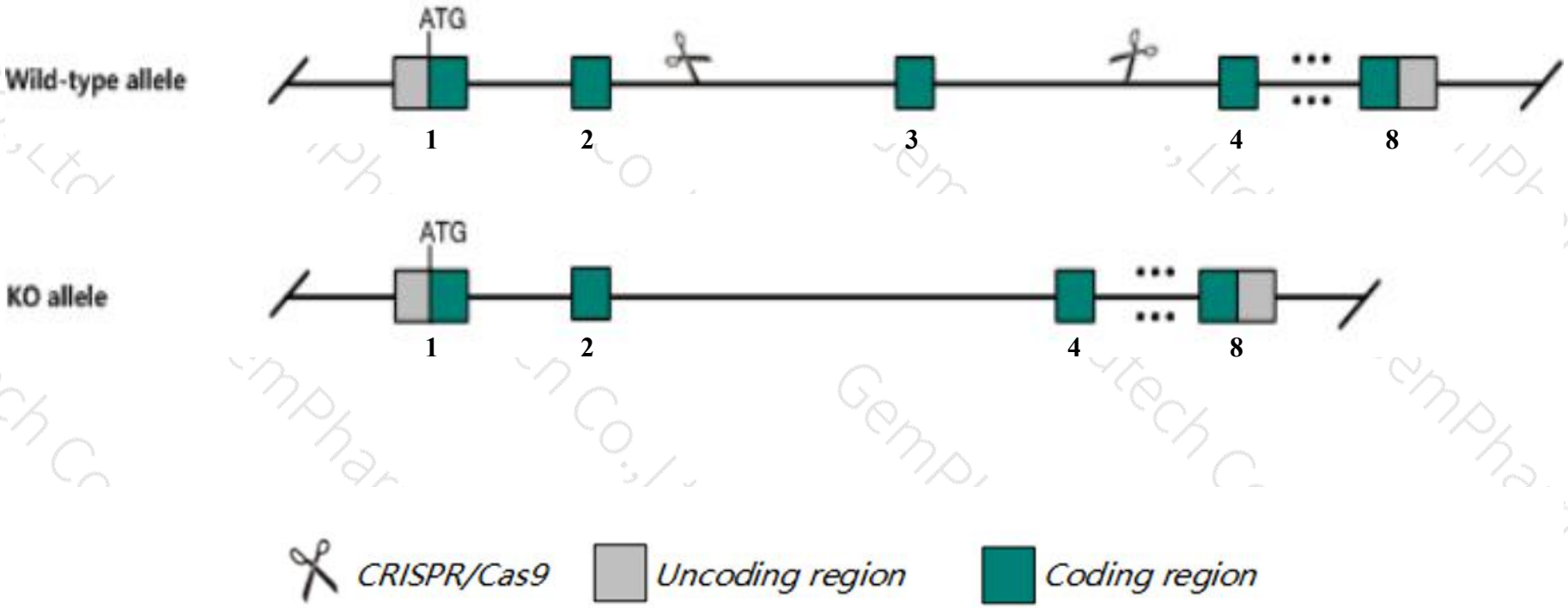
Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Gopc* gene has 6 transcripts. According to the structure of *Gopc* gene, exon3 of *Gopc-201*(ENSMUST00000020008.9) transcript is recommended as the knockout region.The region contains 176bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Gopc* 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 null allele show male sterility with globozoospermia characterized by a complete lack of acrosomes due to failure of vesicle transport from the Golgi apparatus, a malformed sperm nucleus, and abnormal mitochondrial arrangement in the mitochondrial sheath of mutant spermatozoa.

➢ Transcript *Gopc-205* is incomplete, so the effect on it is unknown.

➢ The *Gopc* gene is located on the Chr10. 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）

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Gopc golgi associated PDZ and coiled-coil motif containing [*Mus musculus* (house mouse)]

Gene ID: 94221, updated on 26-Jun-2020

Summary

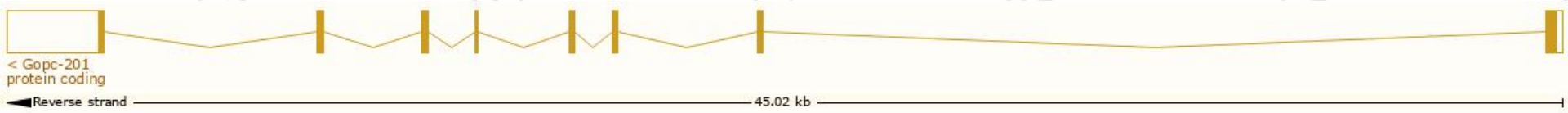
Official Symbol	Gopc provided by MGI
Official Full Name	golgi associated PDZ and coiled-coil motif containing provided by MGI
Primary source	MGI:MGI:2149946
See related	Ensembl:ENSMUSG00000019861
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CAL; FIG; PIST; GOPC1; AI844555; 2210402P09Rik
Expression	Ubiquitous expression in cerebellum adult (RPKM 7.3), genital fat pad adult (RPKM 6.5) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

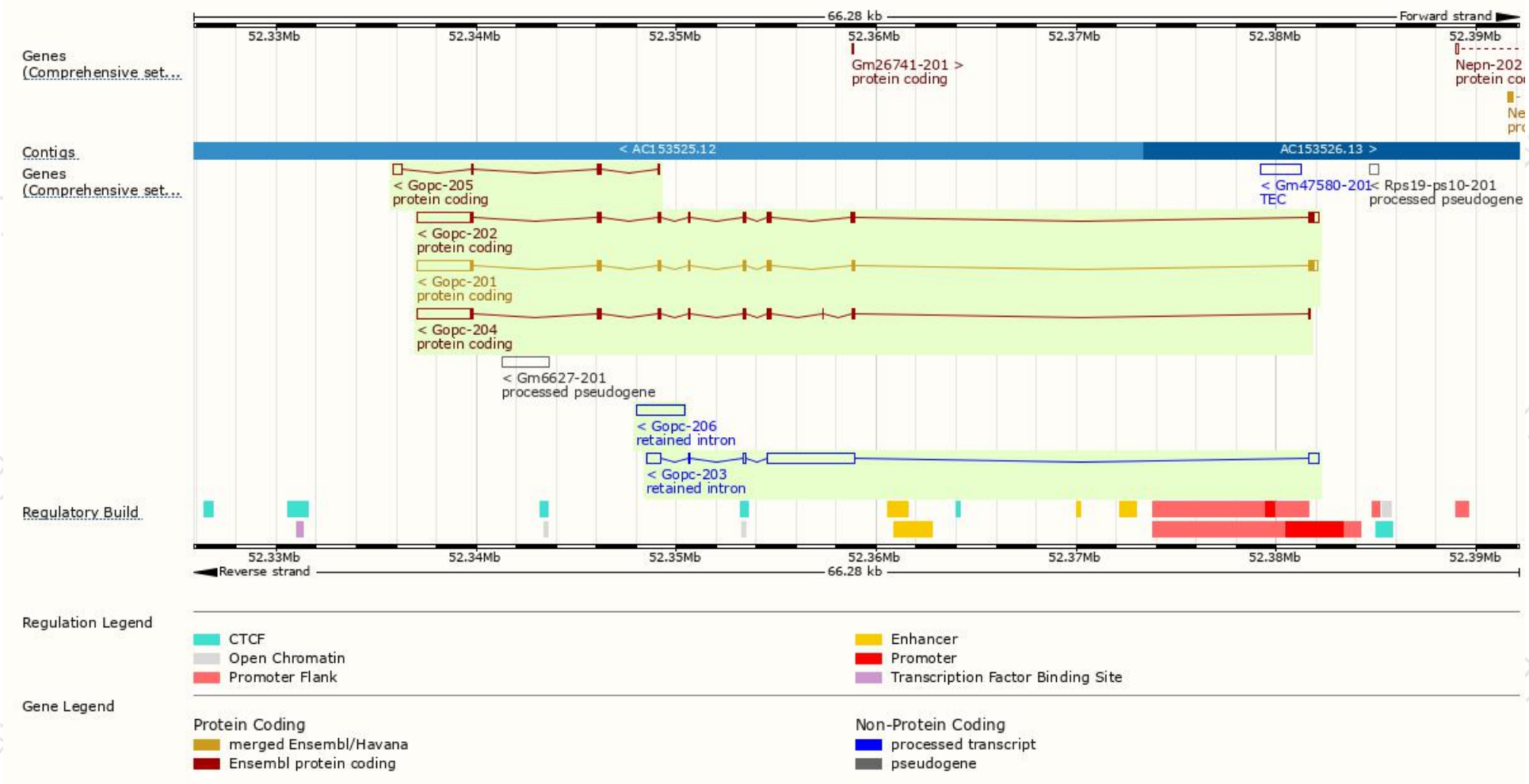
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein ▲	Biotype	CCDS	UniProt	Flags
Gopc-205	ENSMUST00000217995.1	744	103aa	Protein coding	-	A0A1W2P7A5	CDS 5' incomplete TSL:3
Gopc-204	ENSMUST00000217753.1	3875	403aa	Protein coding	-	A0A1W2P7V0	CDS 5' incomplete TSL:1
Gopc-201	ENSMUST00000020008.9	4216	455aa	Protein coding	CCDS35898	Q8BH60	TSL:1 GENCODE basic APPRIS P2
Gopc-202	ENSMUST00000105475.8	4317	463aa	Protein coding	-	K3W4Q9	TSL:5 GENCODE basic APPRIS ALT2
Gopc-203	ENSMUST00000217710.1	5850	No protein	Retained intron	-	-	TSL:5
Gopc-206	ENSMUST00000220099.1	2356	No protein	Retained intron	-	-	TSL:NA

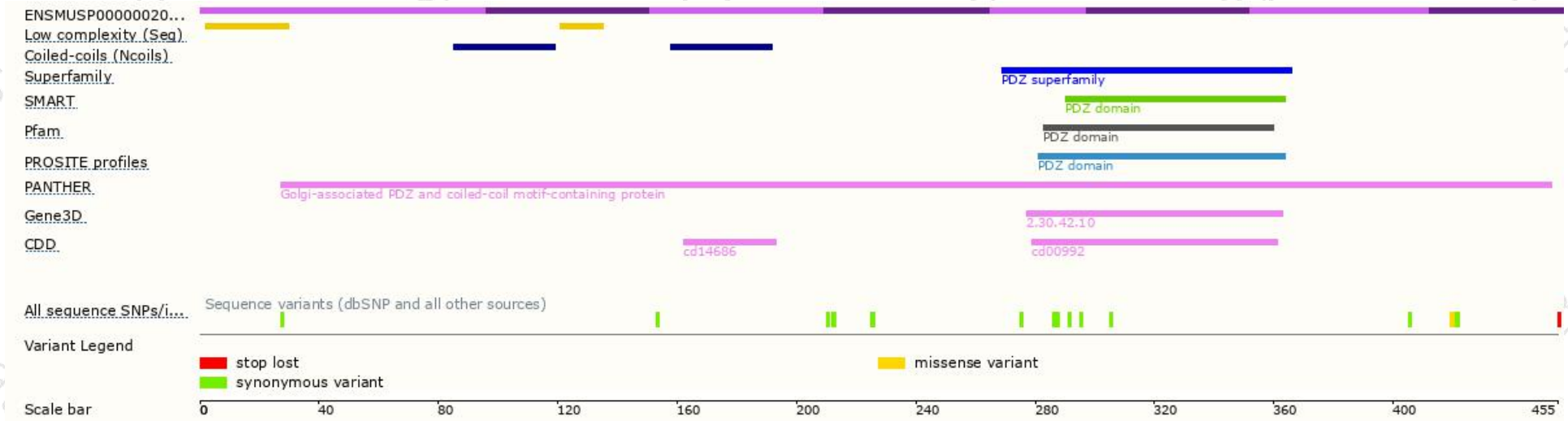
The strategy is based on the design of *Gopc-201* transcript,the transcription is shown below:



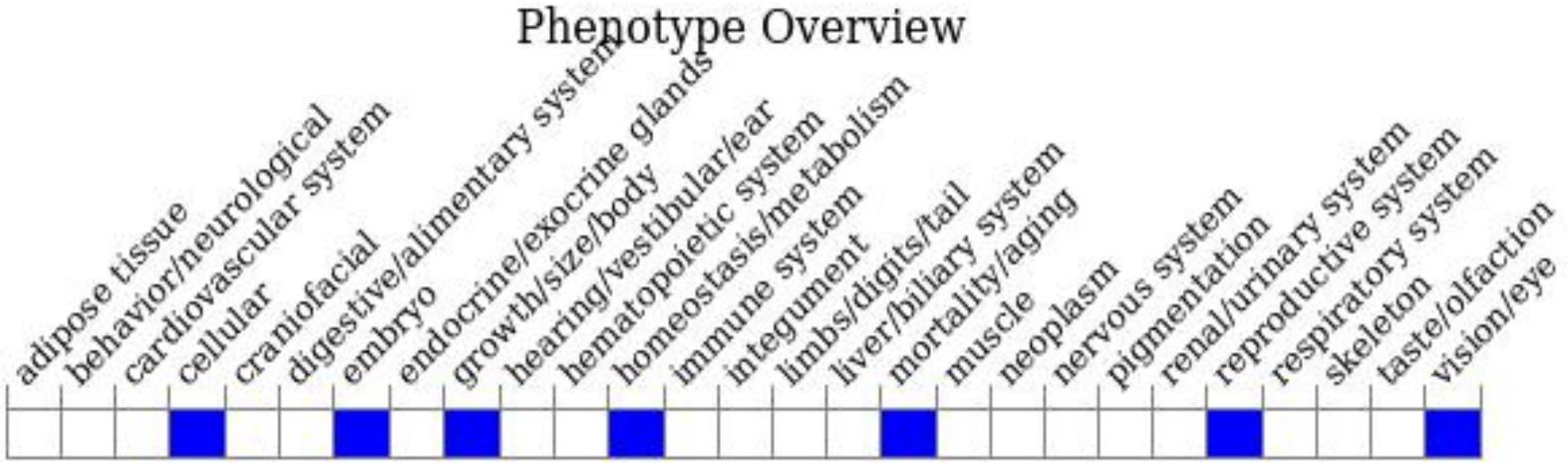
Genomic location distribution



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 null allele show male sterility with globozoospermia characterized by a complete lack of acrosomes due to failure of vesicle transport from the Golgi apparatus, a malformed sperm nucleus, and abnormal mitochondrial arrangement in the mitochondrial sheath of mutant spermatozoa.

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

Tel: 400-9660890

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GemPharmatech Co.,Ltd