Fcgrt Cas9-KO Strategy

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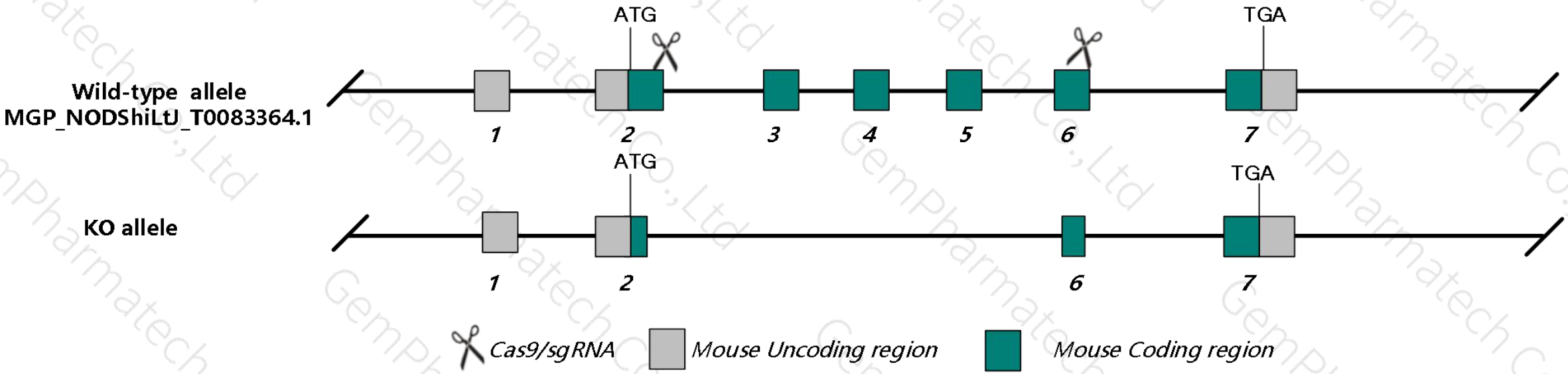
Project Overview

Project Name	***Fcgrt***
Project type	**Cas9-KO**
Strain background	**NCG/Gpt**

Knockout strategy

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



Technical routes

➢ The *Fcgrt* gene has 1 transcripts. According to the structure of *Fcgrt* gene, exon2-exon6 of MGP_NODShiLtJ_T0083364.1 transcript is recommended as the knockout region.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Fcgrt* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of NCG/Gpt 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 NCG/Gpt mice.

Notice

➢ According to the existing MGI data,homozygous mutation of this gene results in defective perinatal transport of maternal IgG, increased clearance of IgG, and diminished IgG antibody response after immunization.

➢ The KO region contains functional region of the Fcgrt gene.Knockout the region may affect the function of Rcn3 gene.

➢ The *Fcgrt* gene is located on the Chr7. 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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Fcgrt Fc receptor, IgG, alpha chain transporter [Mus musculus (house mouse)]

Gene ID: 14132, updated on 13-Mar-2020

Summary

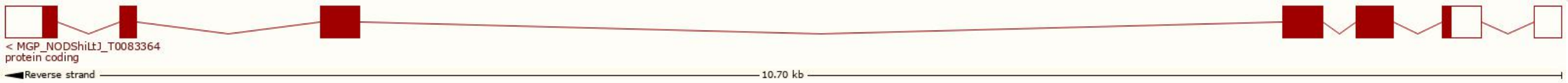
Official Symbol	Fcgrt provided by MGI
Official Full Name	Fc receptor, IgG, alpha chain transporter provided by MGI
Primary source	MGI:MGI:103017
See related	Ensembl:ENSMUSG00000003420
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	FcRn
Expression	Broad expression in placenta adult (RPKM 121.9), mammary gland adult (RPKM 87.9) and 23 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

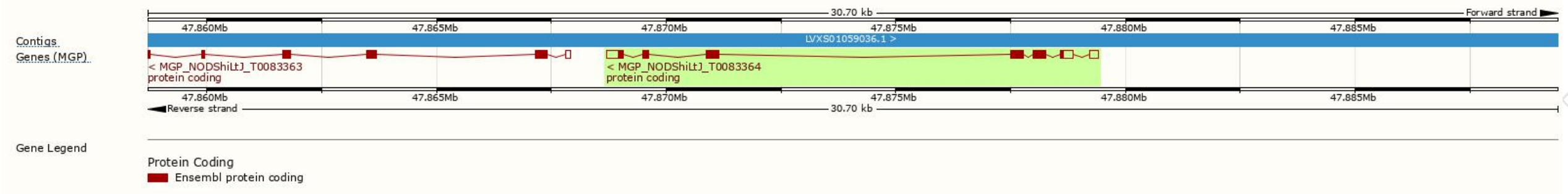
The gene has 1 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
-	MGP_NODShiLtJ_T0083364.1	1738	365aa	Protein coding	CCDS52243	Q61559 Q6PKB0	-

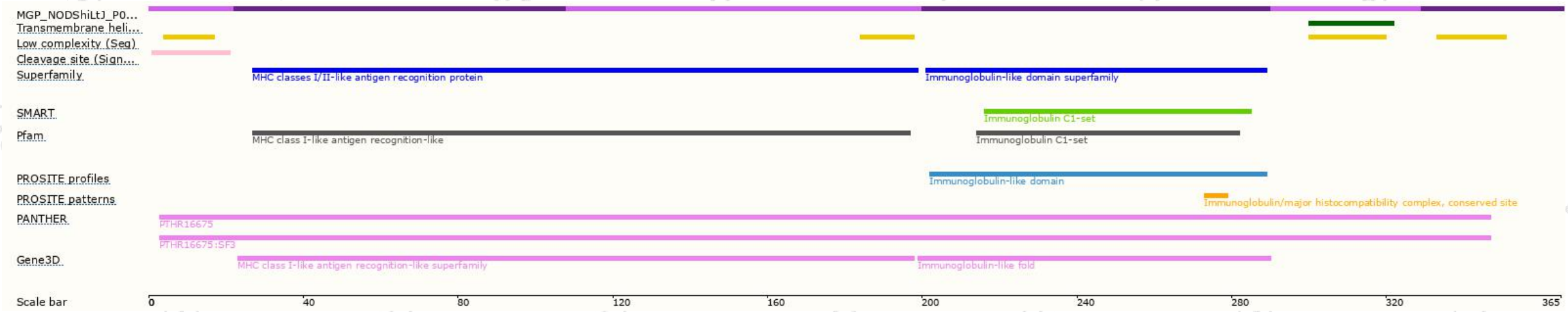
The strategy is based on the design of *MGP_NODShiLtJ_T0083364.1* transcript,the transcription is shown below:



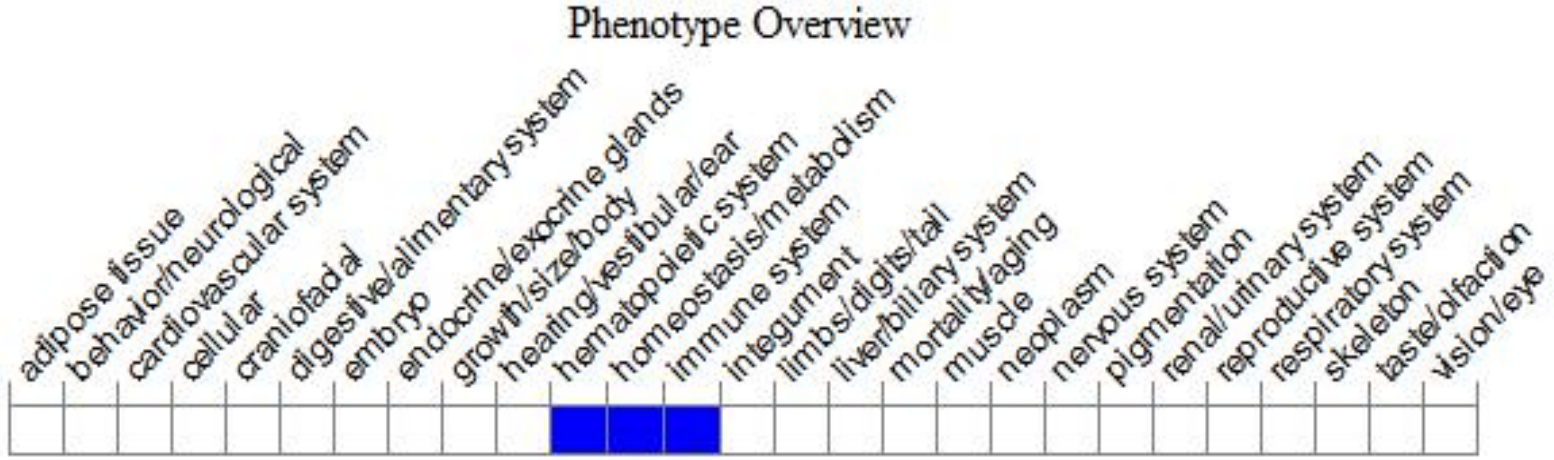
Genomic location distribution



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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