Gpatch2 Cas9-KO Strategy

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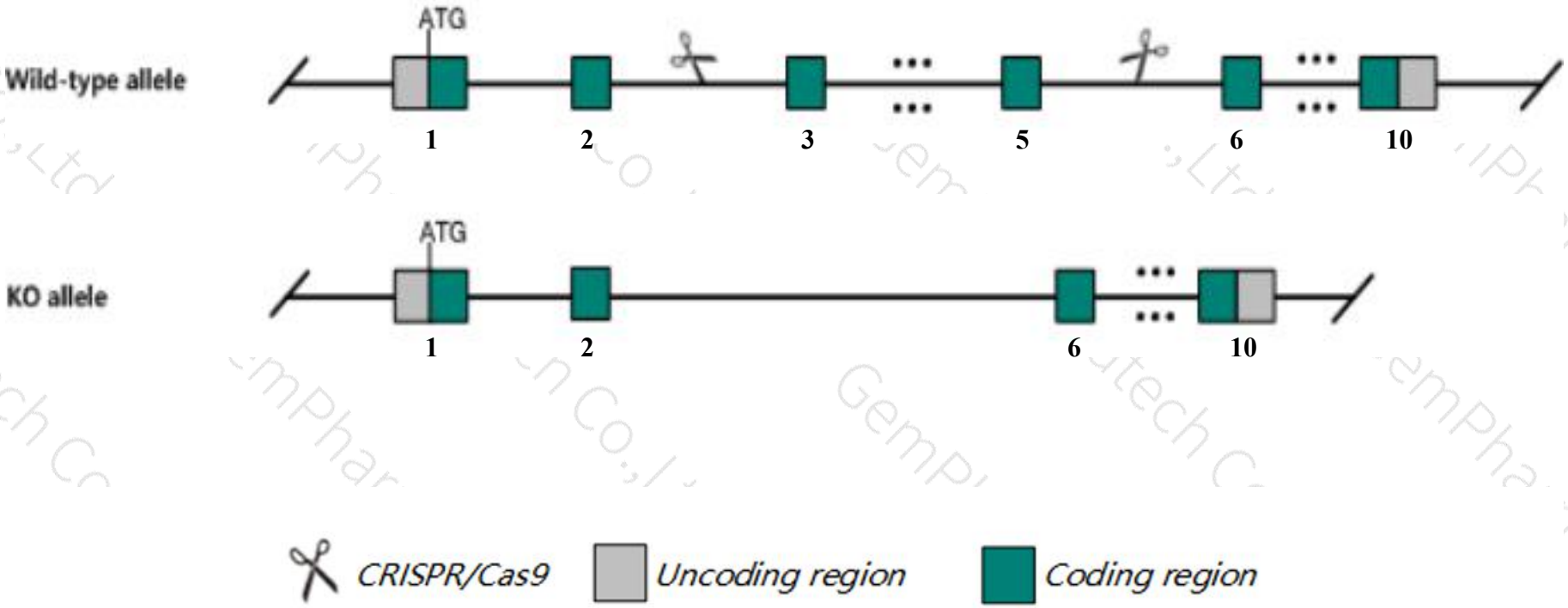
Project Overview

Project Name	***Gpatch2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpatch2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Gpatch2* gene has 9 transcripts. According to the structure of *Gpatch2* gene, exon3-exon5 of *Gpatch2-202*(ENSMUST00000065573.13) transcript is recommended as the knockout region.The region contains 325bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Gpatch2* 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

➢ The *Gpatch2* 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.

➢Some amino acids will remain at the N-terminus and some functions may be retained.

➢ 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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Gpatch2 G patch domain containing 2 [Mus musculus (house mouse)]

Gene ID: 67769, updated on 13-Mar-2020

Summary

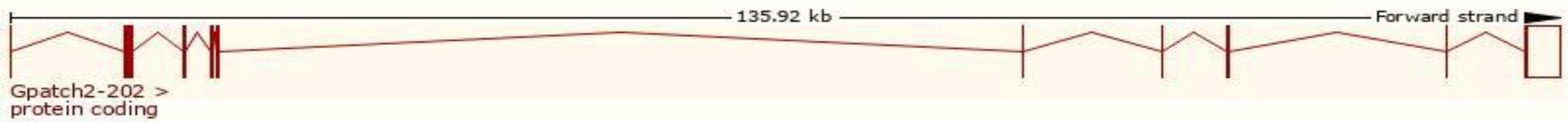
Official Symbol	Gpatch2 provided by MGI
Official Full Name	G patch domain containing 2 provided byMGI
Primary source	MGI:MGI:1915019
See related	Ensembl:ENSMUSG00000039210
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5830433G22Rik, 5830436K05Rik, AI427714, AI447508, AW107440, AW491060, Gpatc2
Expression	Ubiquitous expression in testis adult (RPKM 4.4), CNS E11.5 (RPKM 2.6) and 28 other tissuesSee more
Orthologs	human all

Transcript information Ensembl

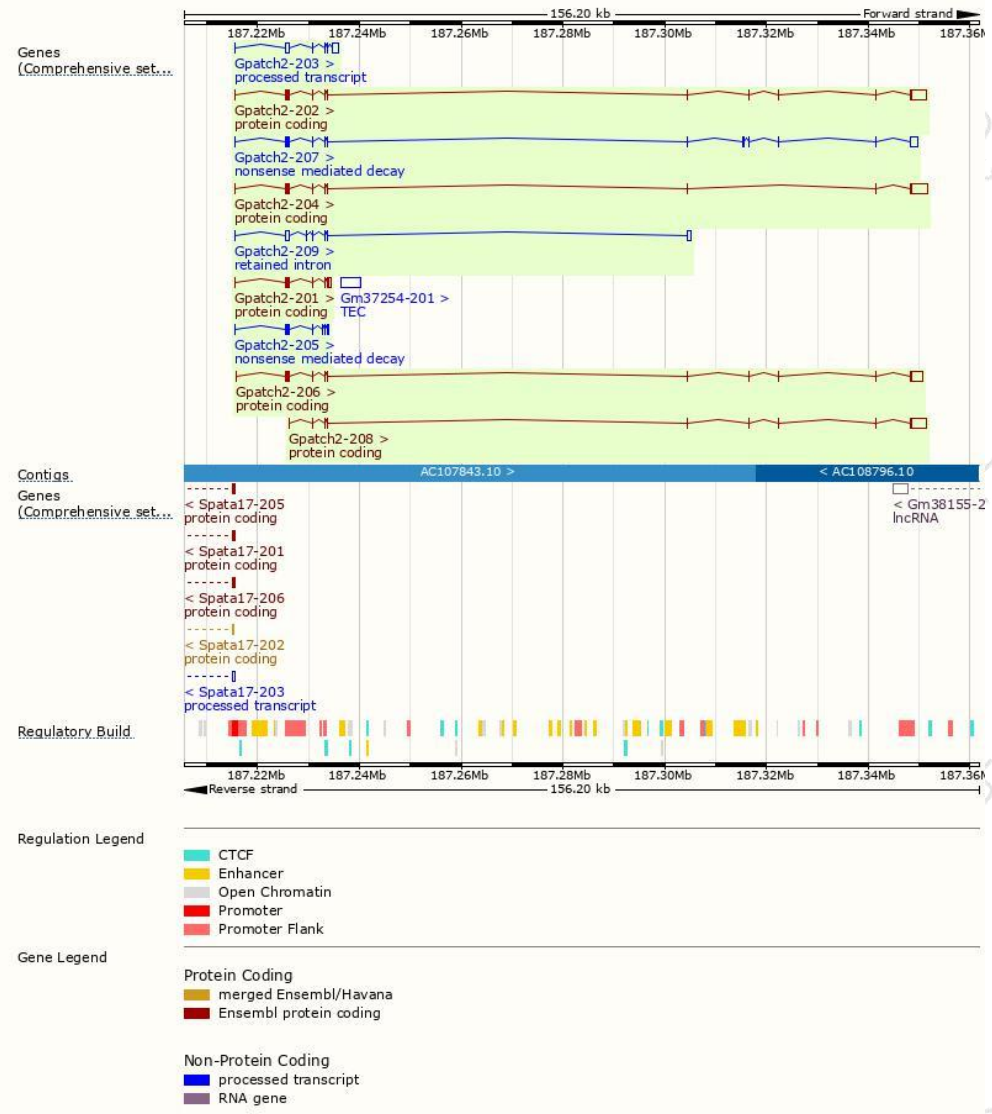
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpatch2-202	ENSMUST00000065573.13	4547	527aa	Protein coding	CCDS15605	Q7TQC7	TSL:1 GENCODE basic APPRIS P2
Gpatch2-204	ENSMUST00000110943.8	4702	490aa	Protein coding	-	Q7TQC7	TSL:1 GENCODE basic APPRIS ALT2
Gpatch2-206	ENSMUST00000160471.7	3841	504aa	Protein coding	-	Q7TQC7	TSL:1 GENCODE basic
Gpatch2-208	ENSMUST00000160570.1	3704	196aa	Protein coding	-	E0CZ29	TSL:1 GENCODE basic
Gpatch2-201	ENSMUST00000044812.11	1639	375aa	Protein coding	-	E9PY25	TSL:1 GENCODE basic
Gpatch2-207	ENSMUST00000160481.7	2880	389aa	Nonsense mediated decay	-	M0QWF5	TSL:1
Gpatch2-205	ENSMUST00000159748.7	1374	300aa	Nonsense mediated decay	-	M0QWJ1	TSL:5
Gpatch2-203	ENSMUST00000097443.9	2411	No protein	Processed transcript	-	-	TSL:1
Gpatch2-209	ENSMUST00000161260.7	1957	No protein	Retained intron	-	-	TSL:1

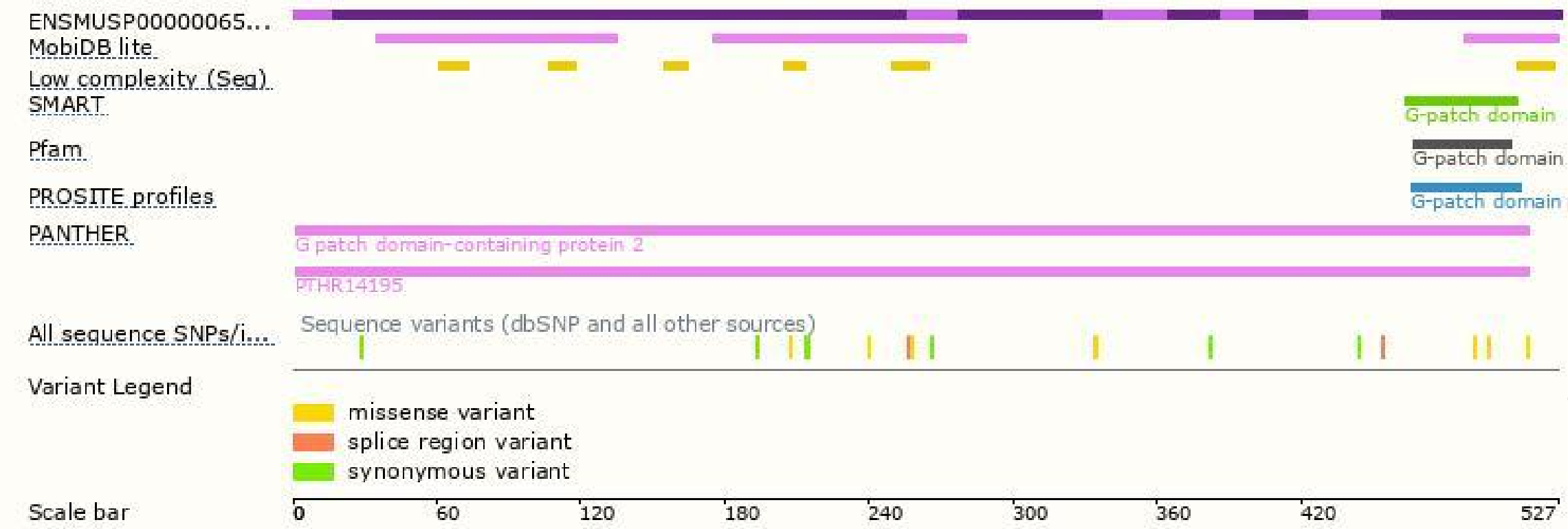
The strategy is based on the design of *Gpatch2-202* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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