Abcc4 Cas9-CKO Strategy

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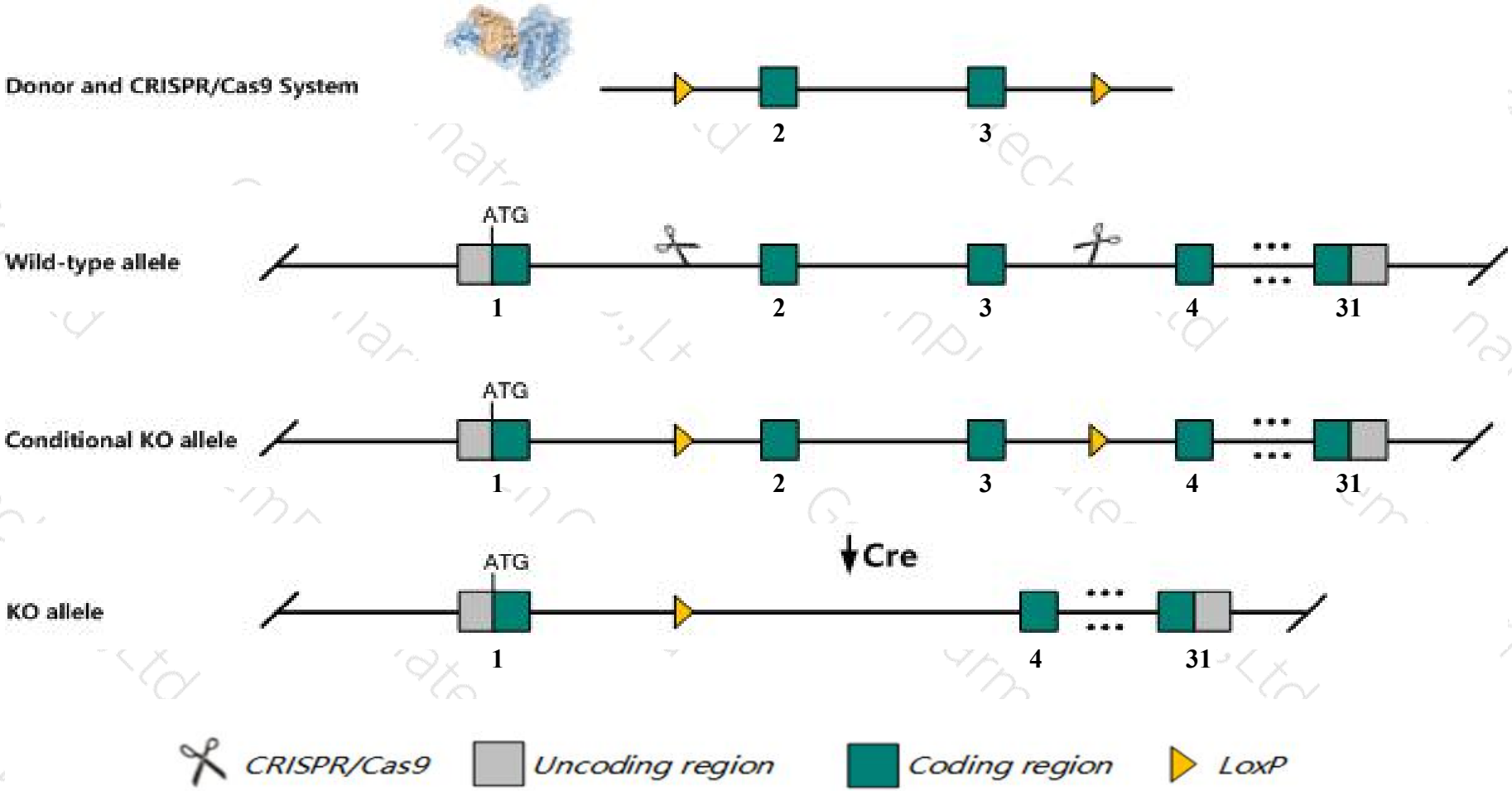
Project Overview

Project Name	***Abcc4***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Abcc4* gene. The schematic diagram is as follows:



Technical routes

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- The *Abcc4* gene has 6 transcripts. According to the structure of *Abcc4* gene, exon2-exon3 of *Abcc4-201* (ENSMUST00000036554.13) transcript is recommended as the knockout region.The region contains 232bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Abcc4* gene. The brief process is as follows:CRISPR/Cas9 system and Donor 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.

- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

- According to the existing MGI data,Homozygous null mice are viable and fertile. Homozygotes for one null allele display impaired organic anion transport in the blood-brain and blood-cerebrospinal fluid barriers and kidney. Homozygotes for a second null allele display hypoalgesia and abnormal PGE2 physiology.

- Transcript *Abcc4*-204，205 may not be affected.

- The *Abcc4* gene is located on the Chr14. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Abcc4 ATP-binding cassette, sub-family C (CFTR/MRP), member 4 [Mus musculus (house mouse)]

Gene ID: 239273, updated on 31-Jan-2019

Summary

Official Symbol	Abcc4 provided by MGI
Official Full Name	ATP-binding cassette, sub-family C (CFTR/MRP), member 4 provided by MGI
Primary source	MGI:MGI:2443111
See related	Ensembl:ENSMUSG00000032849
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	ABCC4-N1, D630049P08Rik, MOATB, MRP4
Expression	Broad expression in kidney adult (RPKM 9.2), bladder adult (RPKM 8.4) and 21 other tissues See more
Orthologs	human all

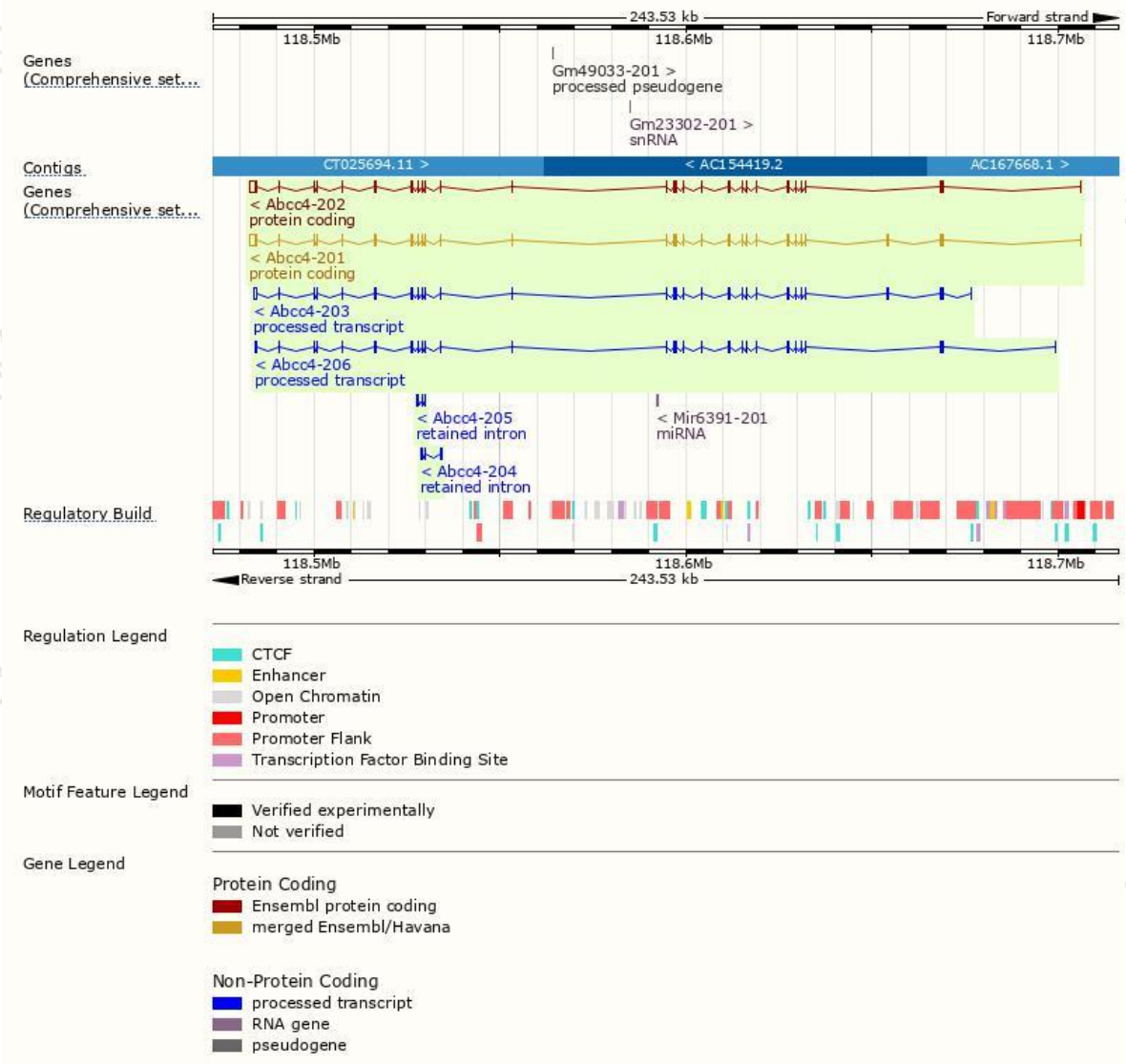
Transcript information（Ensembl）

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

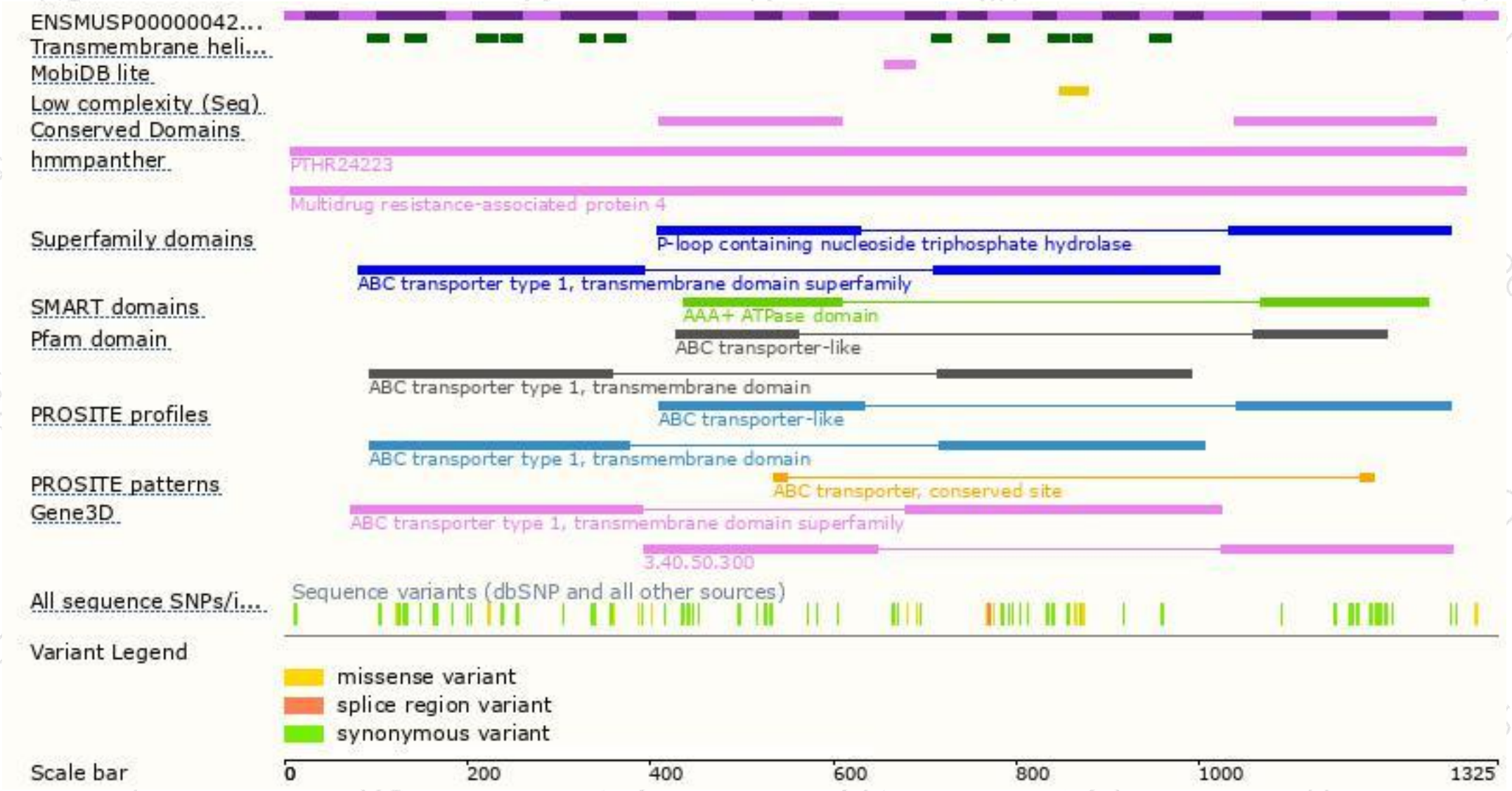
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Abcc4-201	ENSMUST00000036554.13	5715	1325aa	Protein coding	CCDS27335	E9Q236	TSL:1 GENCODE basic APPRIS P3
Abcc4-202	ENSMUST00000166646.1	5504	1250aa	Protein coding	CCDS49565	E9Q467	TSL:1 GENCODE basic APPRIS ALT2
Abcc4-203	ENSMUST00000226703.1	4592	No protein	Processed transcript	-	-	
Abcc4-206	ENSMUST00000228848.1	3723	No protein	Processed transcript	-	-	
Abcc4-204	ENSMUST00000227480.1	639	No protein	Retained intron	-	-	
Abcc4-205	ENSMUST00000228691.1	513	No protein	Retained intron	-	-	

The strategy is based on the design of *Abcc4-201* transcript,The transcription is shown below

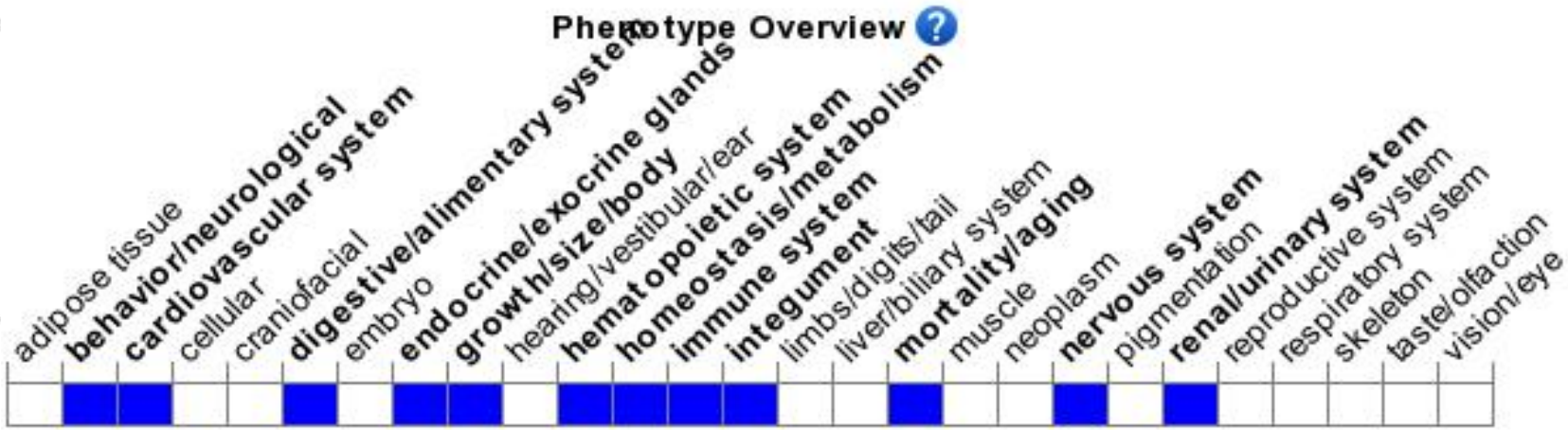
Genomic location distribution



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/).

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

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