Hvcn1 Cas9-KO Strategy

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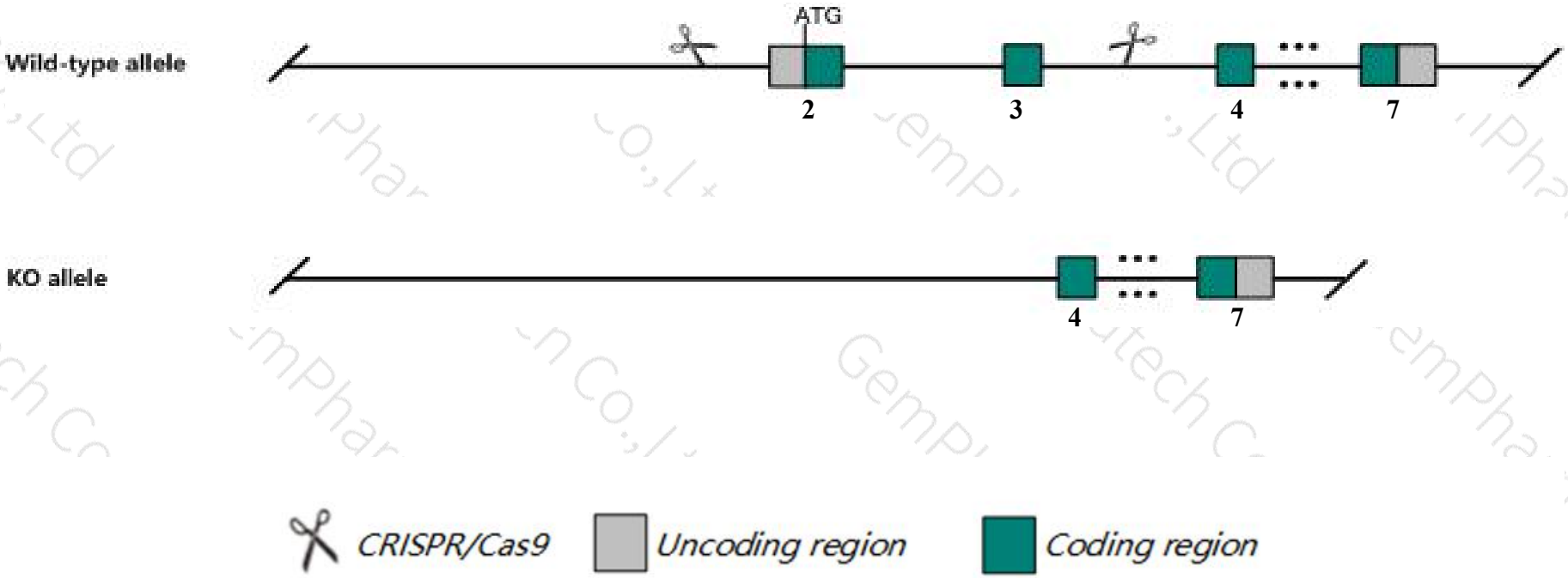
Project Overview

Project Name	***Hvcn1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hvcn1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Hvcn1* gene has 5 transcripts. According to the structure of *Hvcn1* gene, exon2-exon3 of *Hvcn1-202* (ENSMUST00000100747.2) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Hvcn1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mice homozygous for a gene trap allele lack neutrophil and macrophage voltage-gated proton pumps.

- The *Hvcn1* gene is located on the Chr5. 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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Hvcn1 hydrogen voltage-gated channel 1 [Mus musculus (house mouse)]

Gene ID: 74096, updated on 19-Mar-2019

Summary

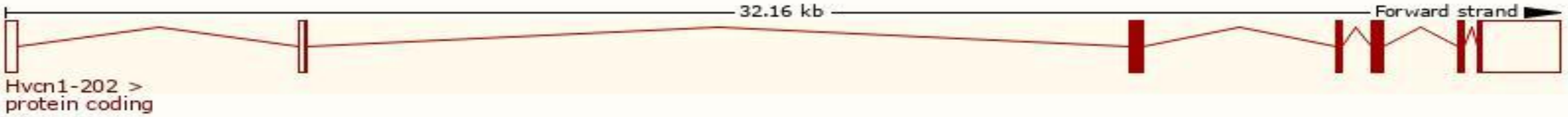
Official Symbol	Hvcn1 provided by MGI
Official Full Name	hydrogen voltage-gated channel 1 provided by MGI
Primary source	MGI:MGI:1921346
See related	Ensembl:ENSMUSG00000064267
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	0610039P13Rik, AI450555, BTS, HV1, Vsop., mVSOP
Expression	Broad expression in spleen adult (RPKM 61.0), mammary gland adult (RPKM 25.5) and 17 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

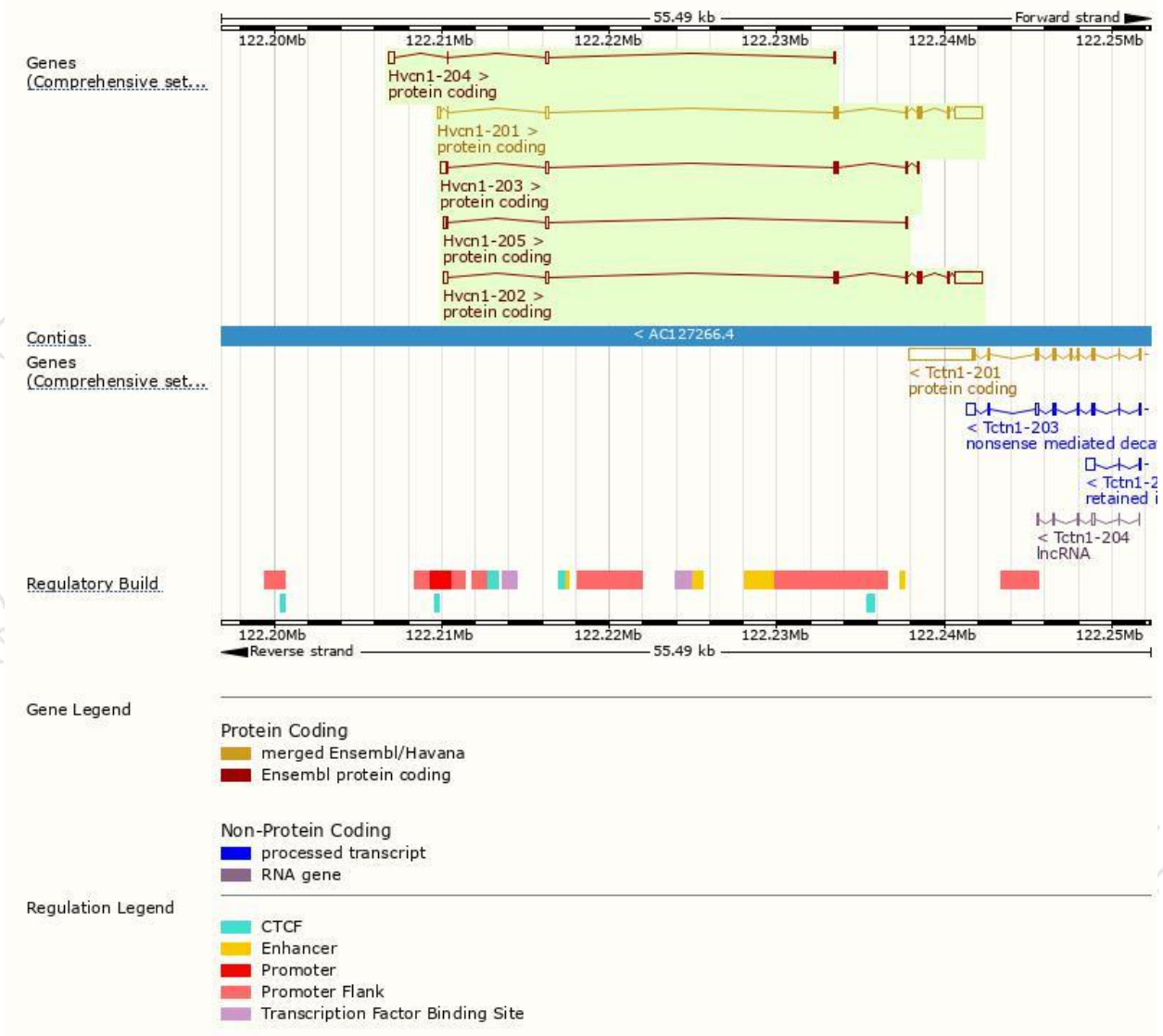
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hvcn1-202	ENSMUST00000100747.2	2805	269aa	Protein coding	CCDS19644	Q3U2S8	TSL:1 GENCODE basic APPRIS P1
Hvcn1-201	ENSMUST00000072602.13	2790	269aa	Protein coding	CCDS19644	Q3U2S8	TSL:1 GENCODE basic APPRIS P1
Hvcn1-203	ENSMUST00000143560.7	1010	168aa	Protein coding	-	D3Z019	CDS 3' incomplete TSL:3
Hvcn1-204	ENSMUST00000145854.7	657	47aa	Protein coding	-	D3YZ46	CDS 3' incomplete TSL:3
Hvcn1-205	ENSMUST00000196187.4	427	41aa	Protein coding	-	A0A0G2JGA0	CDS 3' incomplete TSL:5

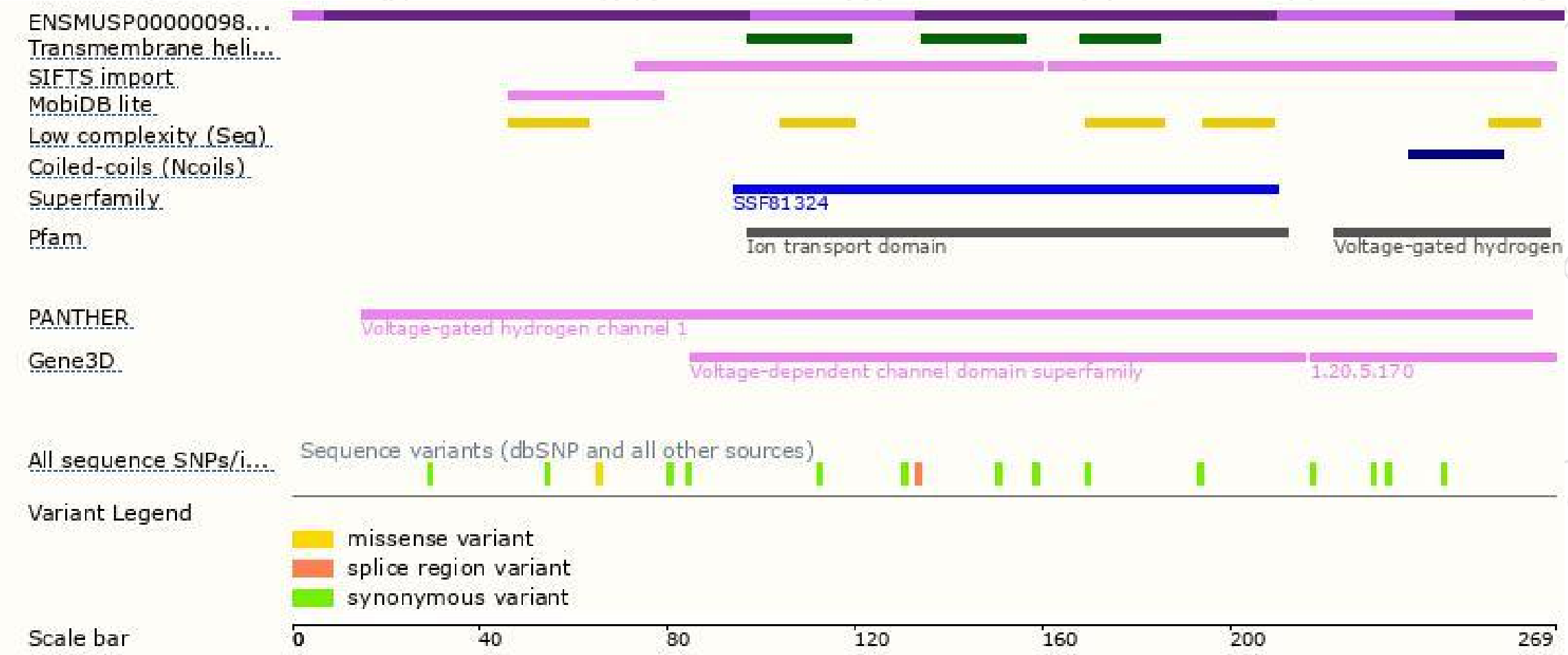
The strategy is based on the design of *Hvcn1-202* transcript,The transcription is shown below



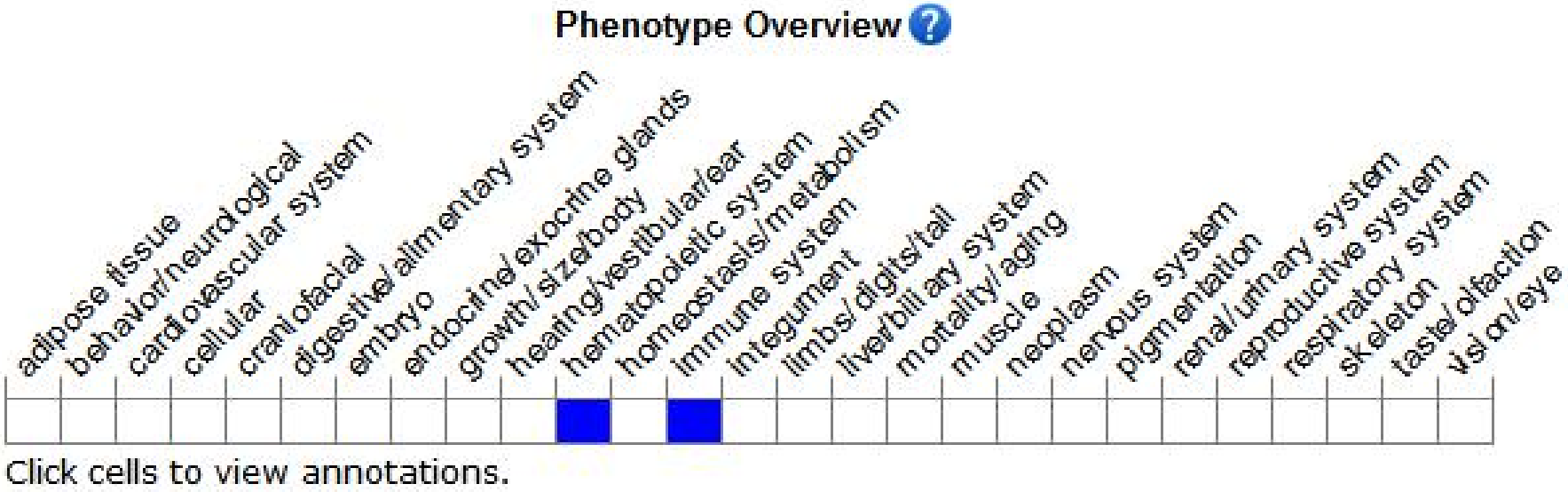
Genomic location distribution



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 gene trap allele lack neutrophil and macrophage voltage-gated proton pumps.

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

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