Rdh13 Cas9-KO Strategy

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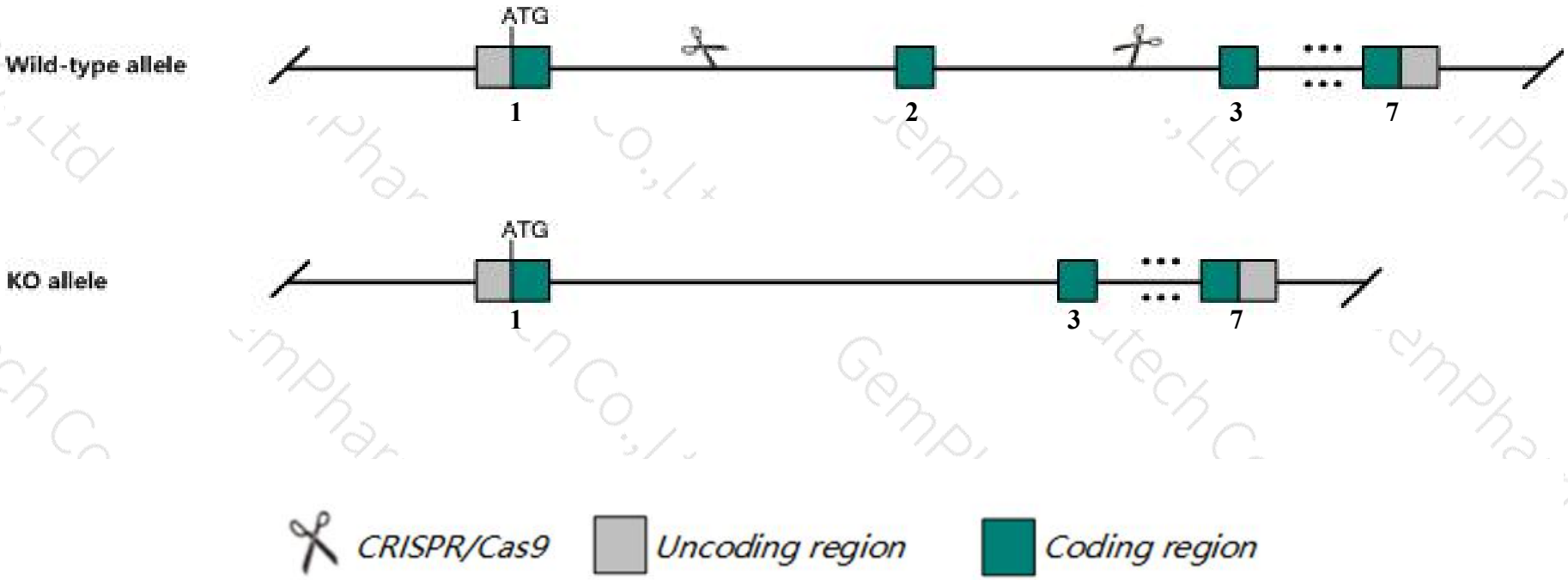
Design Date: 2019-7-30

Project Overview

Project Name	***Rdh13***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rdh13* gene. The schematic diagram is as follows:



Technical routes

➢ The *Rdh13* gene has 6 transcripts. According to the structure of *Rdh13* gene, exon2 of *Rdh13-201* (ENSMUST00000008579.13) transcript is recommended as the knockout region.The region contains 119bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Rdh13* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit disintegration of the outer-plus-inner-segment and outer nuclear layers, reduced amplitudes of a- and b-waves under scotopic conditions and swollen mitochondria in the inner segment following exposure to intense light.

- The *Rdh13* 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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Rdh13 retinol dehydrogenase 13 (all-trans and 9-cis) [Mus musculus (house mouse)]

Gene ID: 108841, updated on 3-Feb-2019

Summary

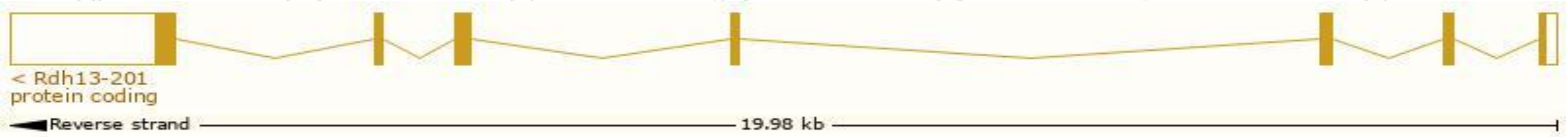
Official Symbol	Rdh13 provided by MGI
Official Full Name	retinol dehydrogenase 13 (all-trans and 9-cis) provided byMGI
Primary source	MGI:MGI:1918732
See related	Ensembl:ENSMUSG00000008435
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	8430425D21Rik
Expression	Ubiquitous expression in CNS E18 (RPKM 8.9), whole brain E14.5 (RPKM 7.0) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

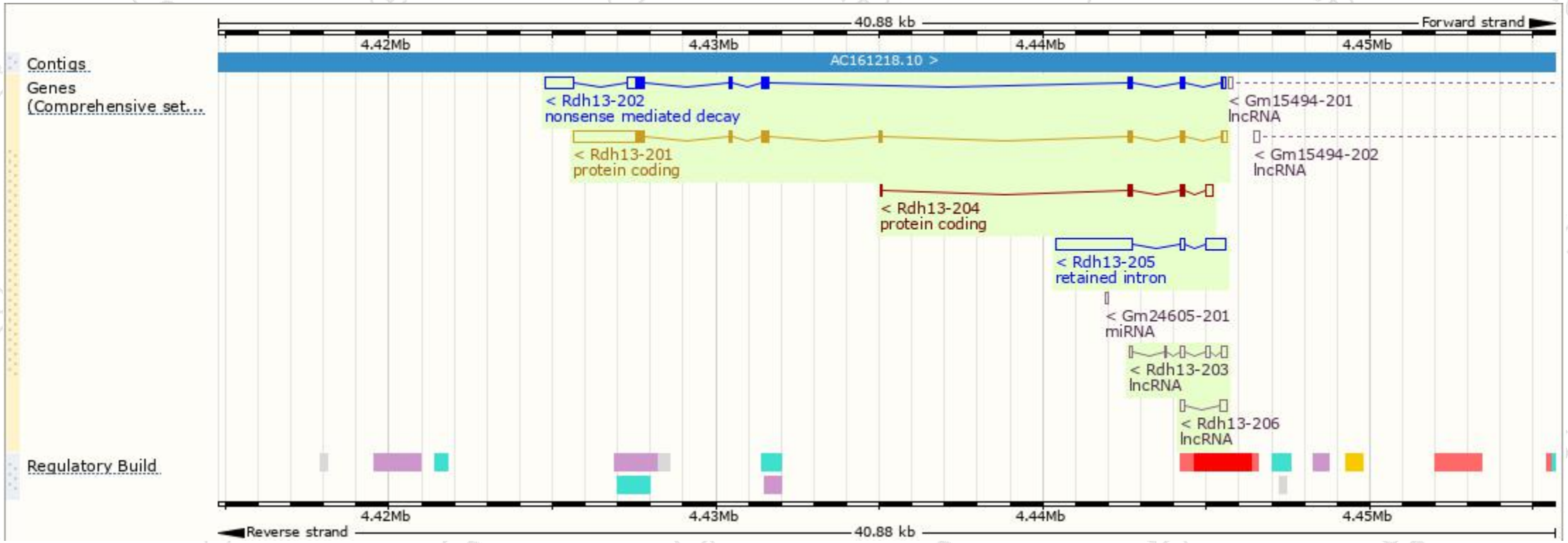
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rdh13-201	ENSMUST00000008579.13	3034	334aa	Protein coding	CCDS20735	Q8CEE7	TSL:1 GENCODE basic APPRIS P1
Rdh13-204	ENSMUST00000138798.1	545	115aa	Protein coding	-	D3YVJ8	CDS 3' incomplete TSL:3
Rdh13-202	ENSMUST00000119485.7	2119	299aa	Nonsense mediated decay	-	A0A0R4J1N8	TSL:1
Rdh13-205	ENSMUST00000147599.7	3078	No protein	Retained intron	-	-	TSL:1
Rdh13-203	ENSMUST00000128299.2	594	No protein	lncRNA	-	-	TSL:5
Rdh13-206	ENSMUST00000154033.1	333	No protein	lncRNA	-	-	TSL:2

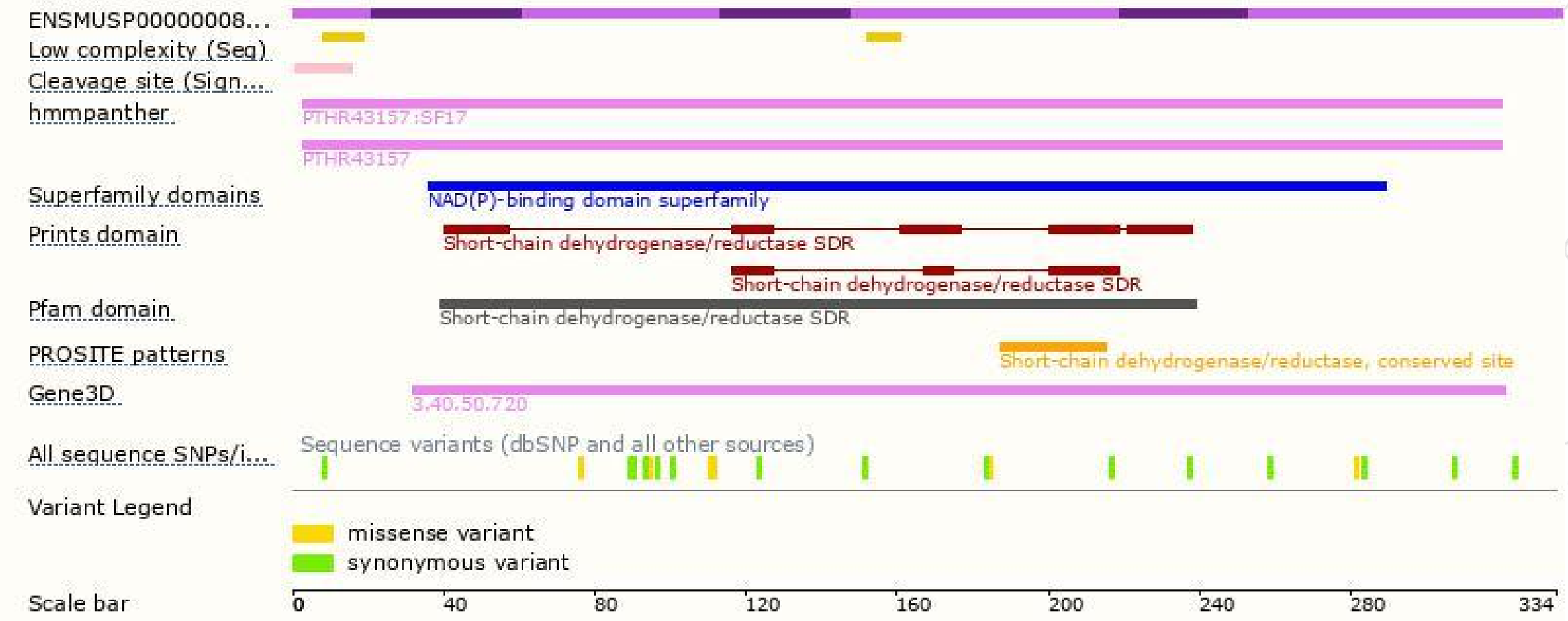
The strategy is based on the design of *Rdh13-201* transcript,The transcription is shown below



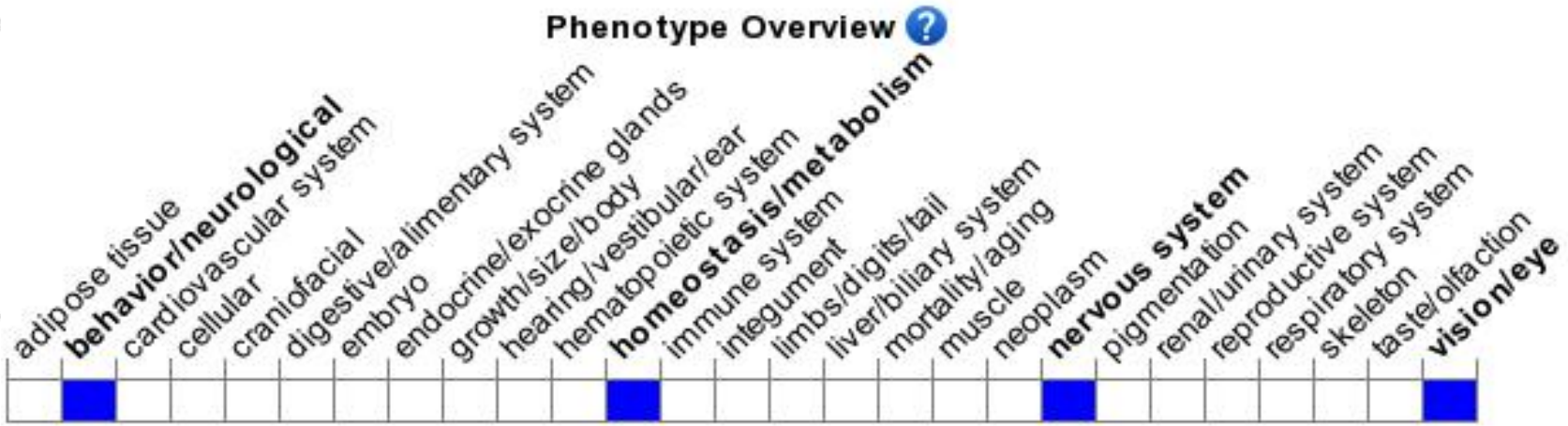
Genomic location distribution



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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