Chrna3 Cas9-KO Strategy

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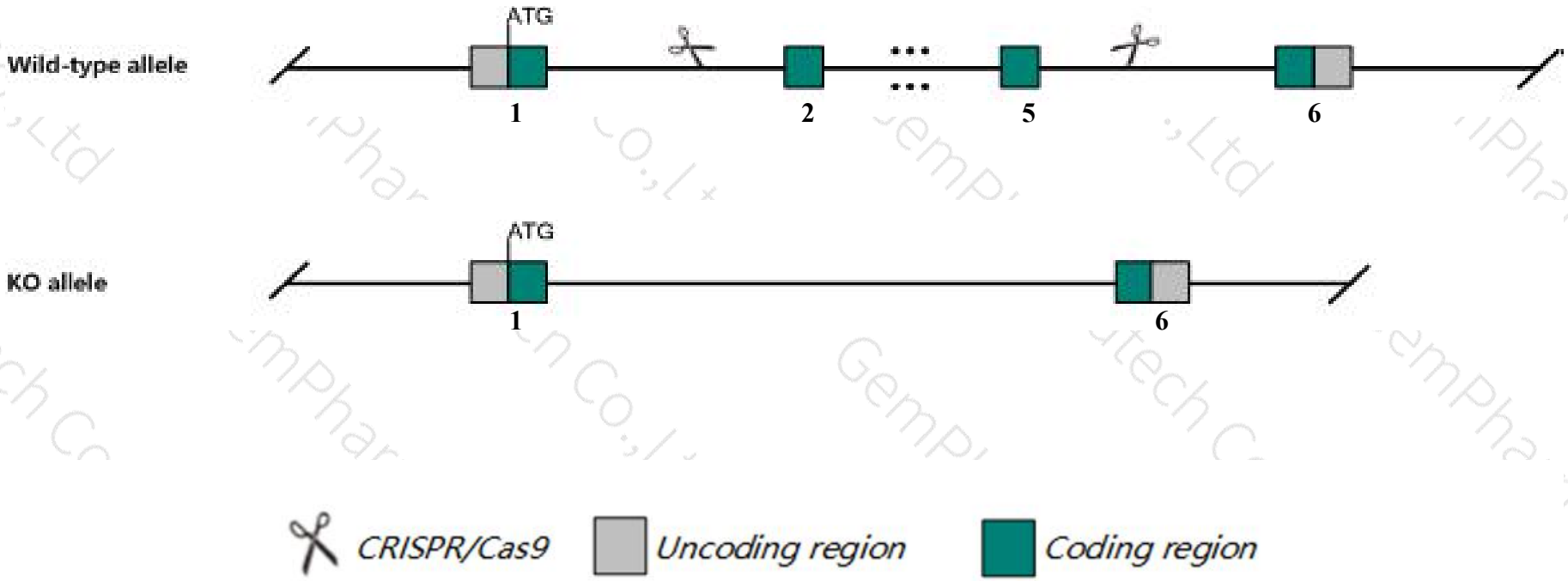
Project Overview

Project Name	***Chrna3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Chrna3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Chrna3* gene has 3 transcripts. According to the structure of *Chrna3* gene, exon2-exon5 of *Chrna3-203* (ENSMUST00000238862.1) transcript is recommended as the knockout region.The region contains 1307bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Chrna3* gene. The brief process is as follows: CRISPR/Cas9 syster

Notice

- According to the existing MGI data,Homozygotes for a targeted null mutation show high postnatal and postweaning mortality. Mutants show reduced bladder contractility resulting in enlarged bladder, infections and urinary stones. Eyes are small, with dilated ocular pupils.

- The *Chrna3* gene is located on the Chr9. 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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Chrna3 cholinergic receptor, nicotinic, alpha polypeptide 3 [*Mus musculus* (house mouse)]

Gene ID: 110834, updated on 7-Oct-2019

Summary

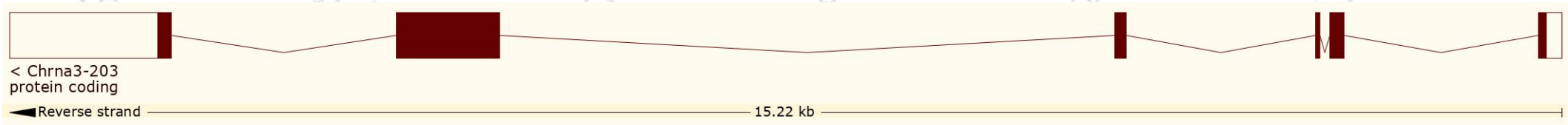
Official Symbol	Chrna3 provided by MGI
Official Full Name	cholinergic receptor, nicotinic, alpha polypeptide 3 provided by MGI
Primary source	MGI:MGI:87887
See related	Ensembl:ENSMUSG00000032303
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	(a)3; Acra3; Acra-3; A730007P14Rik
Expression	Biased expression in adrenal adult (RPKM 6.2), whole brain E14.5 (RPKM 4.2) and 11 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

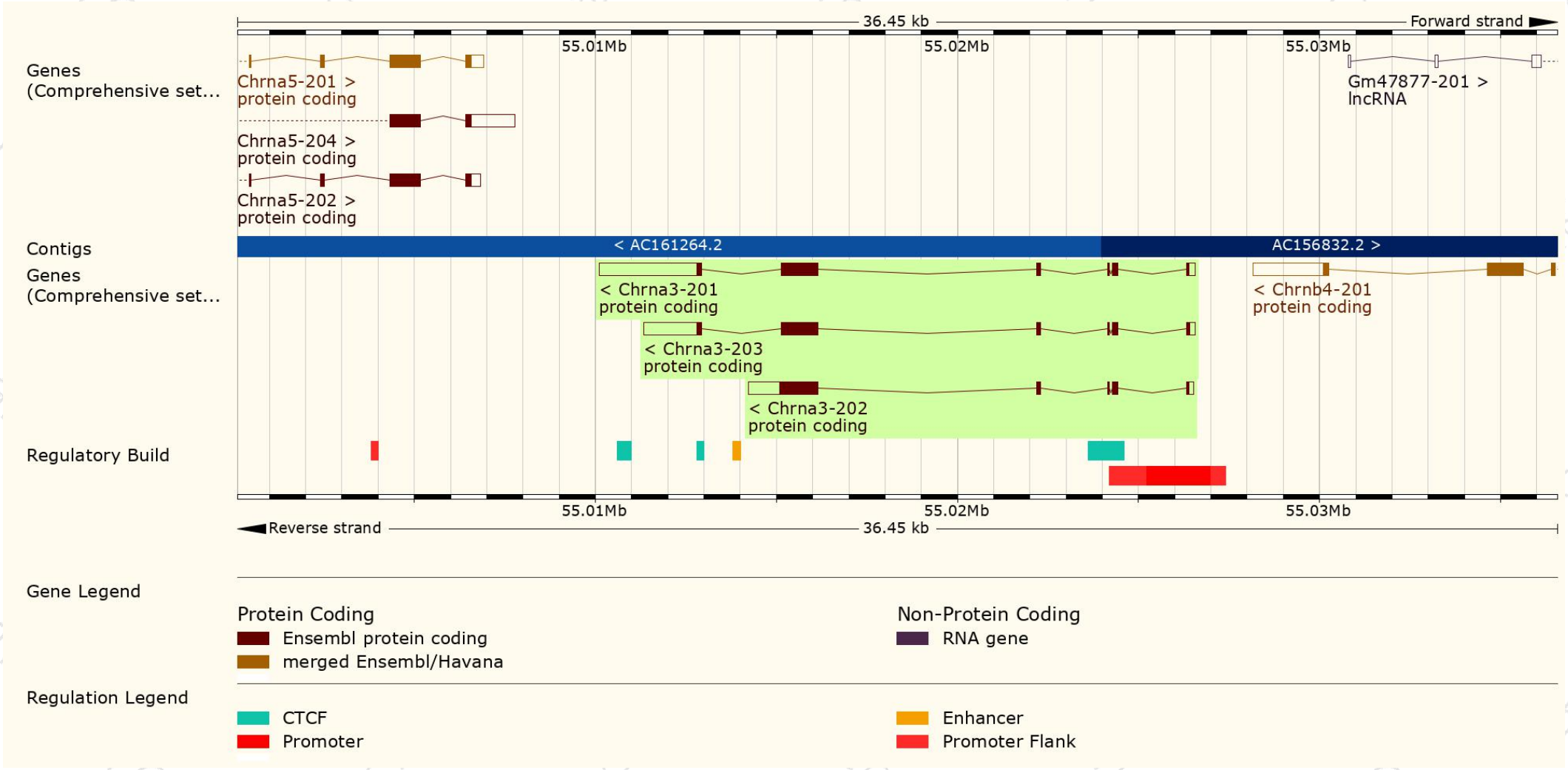
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Chrna3-203	ENSMUST00000238862.1	3123	504aa	Protein coding	CCDS23199	-	GENCODE basic APPRIS P2
Chrna3-202	ENSMUST00000214204.2	2414	471aa	Protein coding	-	A0A1L1SU72	TSL:1 GENCODE basic
Chrna3-201	ENSMUST00000034851.6	4358	499aa	Protein coding	-	Q0VBK4 Q8R4G9	TSL:1 GENCODE basic APPRIS ALT2

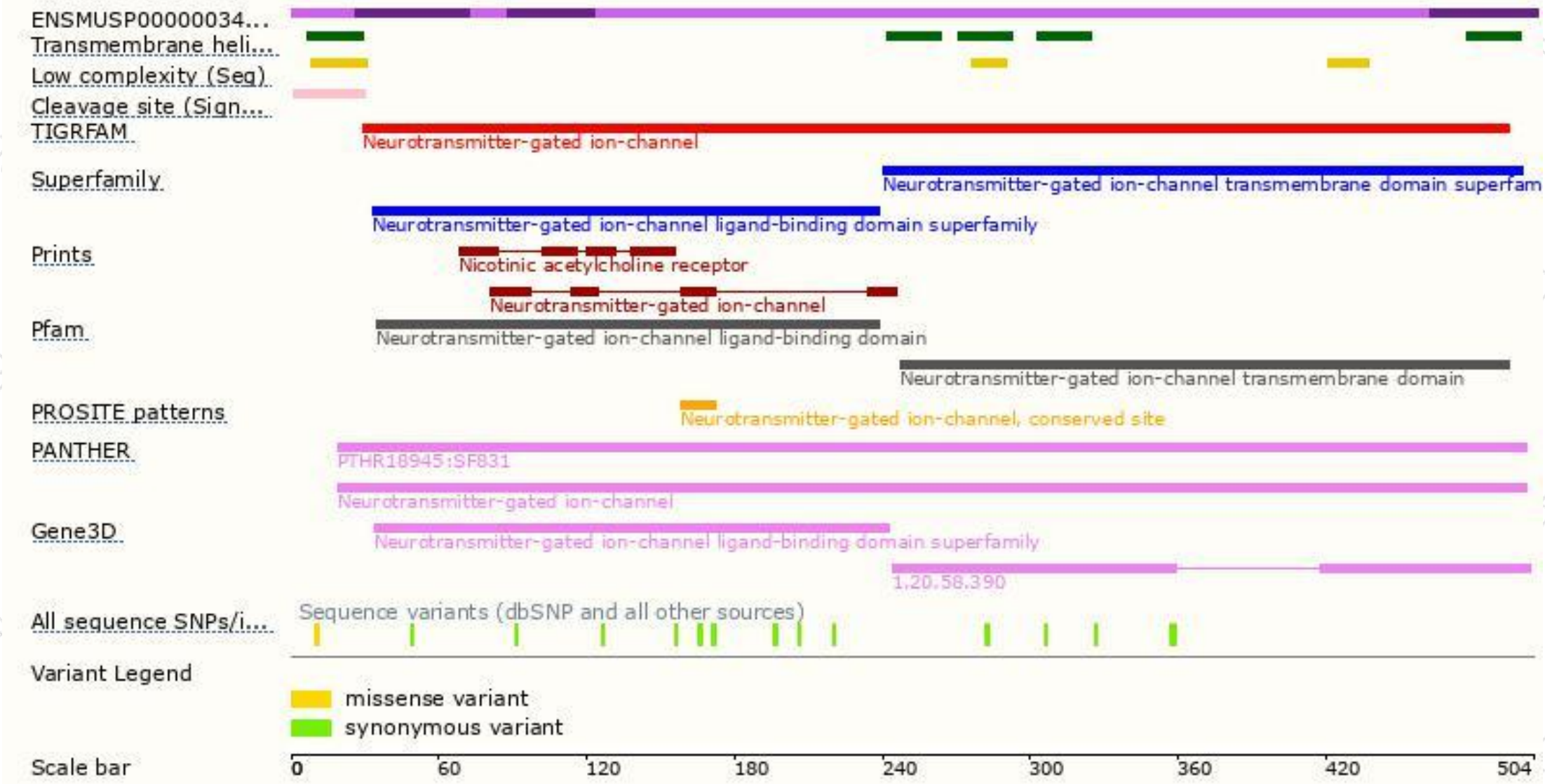
The strategy is based on the design of *Chrna3-203* transcript,The transcription is shown below



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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