

Avpr1a Cas9-CKO Strategy

Designer:

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Design Date:

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Project Overview

Project Name

Avpr1a

Project type

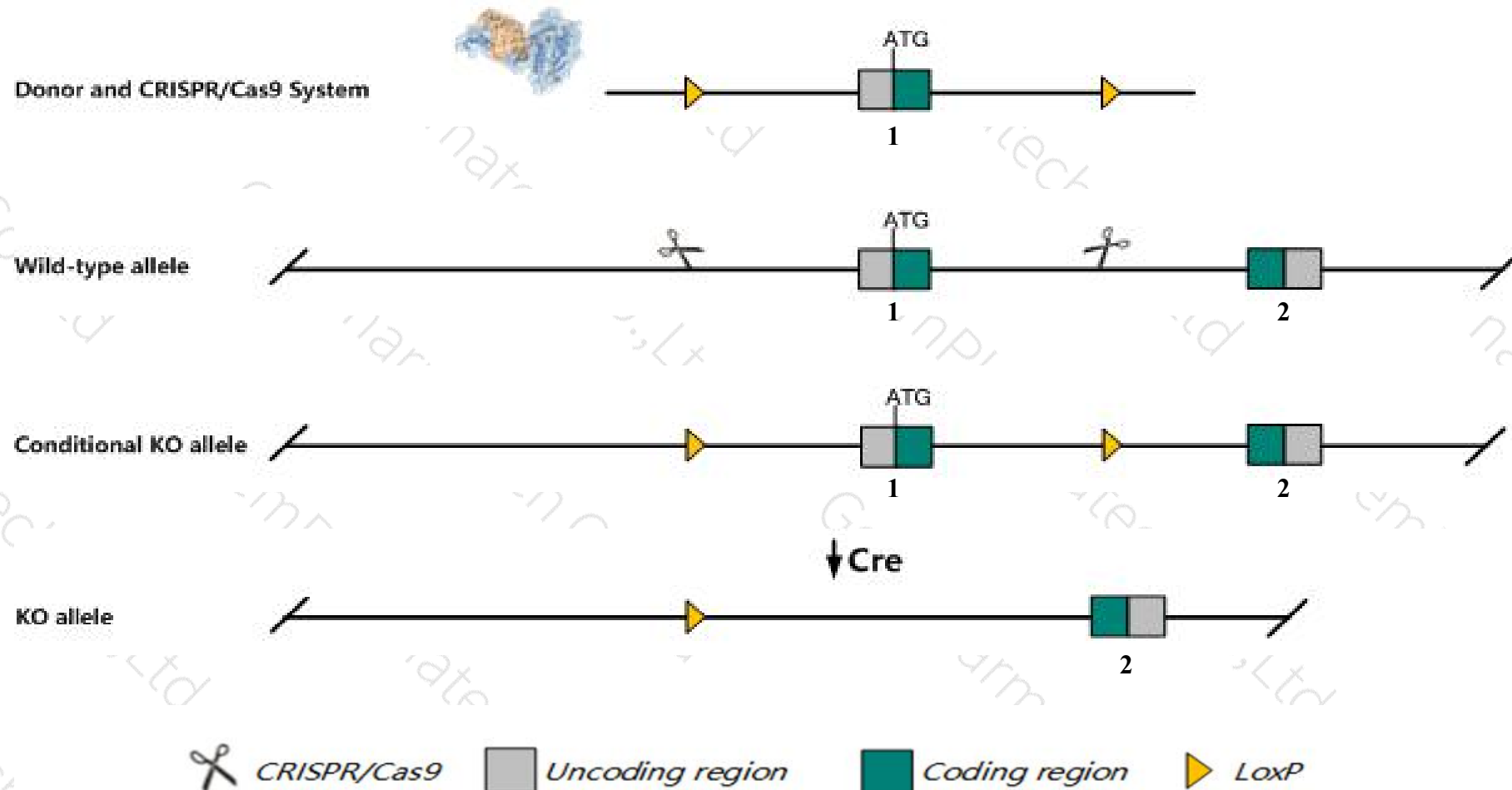
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Avpr1a* gene. The schematic diagram is as follows:



- The *Avpr1a* gene has 1 transcript. According to the structure of *Avpr1a* gene, exon1 of *Avpr1a-201* (ENSMUST00000020323.6) 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 *Avpr1a* 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.

- According to the existing MGI data, Mice homozygous for disruptions in this gene display a stimulus processing deficit similar to that seen in schizophrenia. Anxiety-like behaviors are reduced in males but not females. B cell development is also affected.
- The *Avpr1a* gene is located on the Chr10. 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)

Avpr1a arginine vasopressin receptor 1A [Mus musculus (house mouse)]

Gene ID: 54140, updated on 25-Mar-2019

Summary



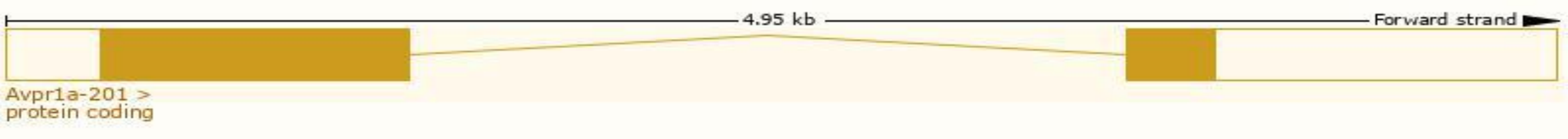
Official Symbol	Avpr1a provided by MGI
Official Full Name	arginine vasopressin receptor 1A provided by MGI
Primary source	MGI:MGI:1859216
See related	Ensembl:ENSMUSG00000020123
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AVPR, Avpr1, V1a, V1aR
Summary	This gene encodes a receptor for arginine vasopressin, a neurohypophyseal hormone involved in diuresis inhibition, smooth muscle contraction, liver glycogenolysis stimulation and regulation of adrenocorticotrophic hormone release from the pituitary. This receptor represents one of three G protein-coupled arginine vasopressin receptors which functions through a phosphatidylinositol-calcium second messenger system in vascular and hepatic tissues [provided by RefSeq, Jul 2008]
Expression	Biased expression in liver adult (RPKM 15.9), bladder adult (RPKM 11.1) and 13 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

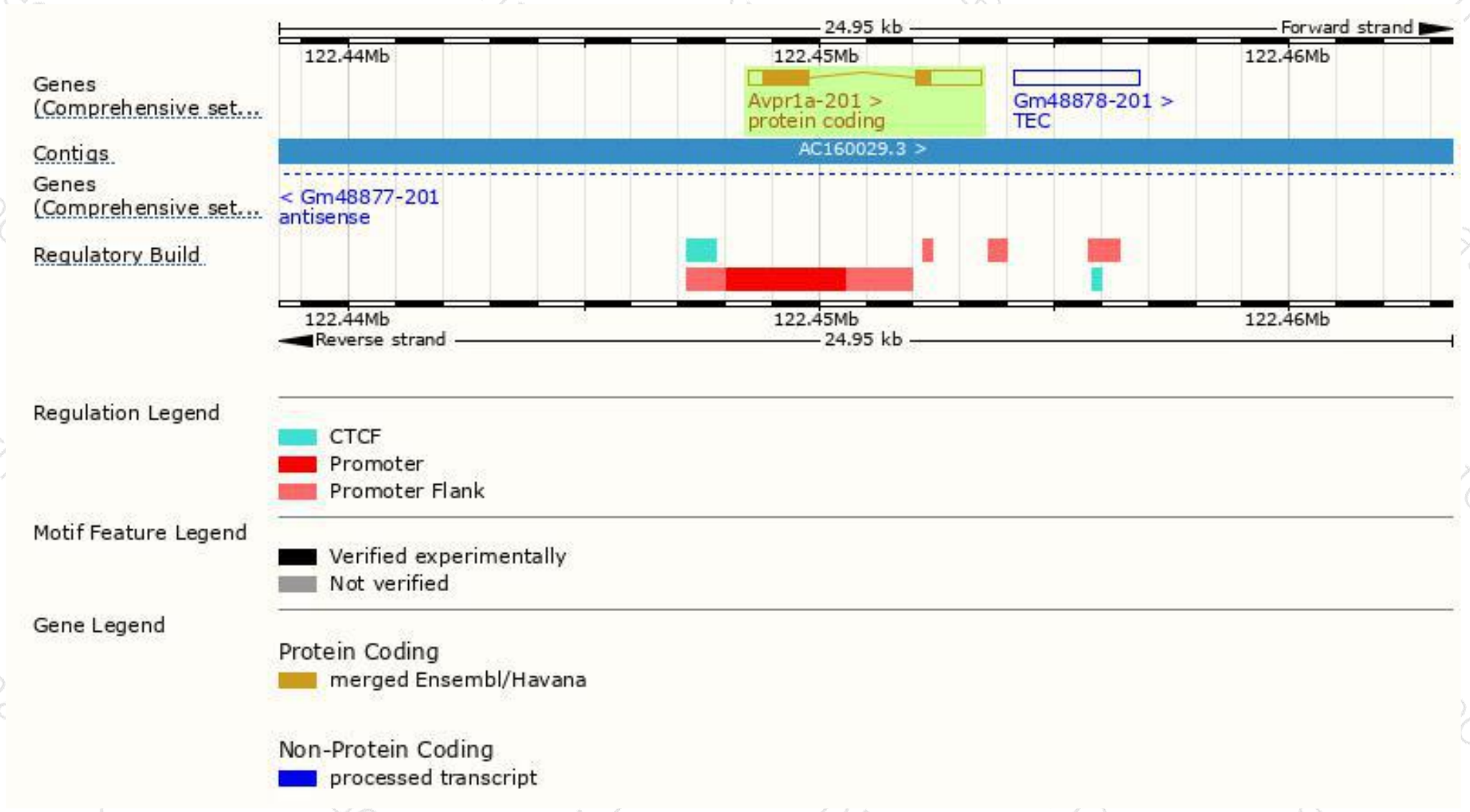
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Avpr1a-201	ENSMUST00000020323.6	2670	423aa	Protein coding	CCDS24215	Q3U1H9 Q62463	TSL:1 GENCODE basic APPRIS P1

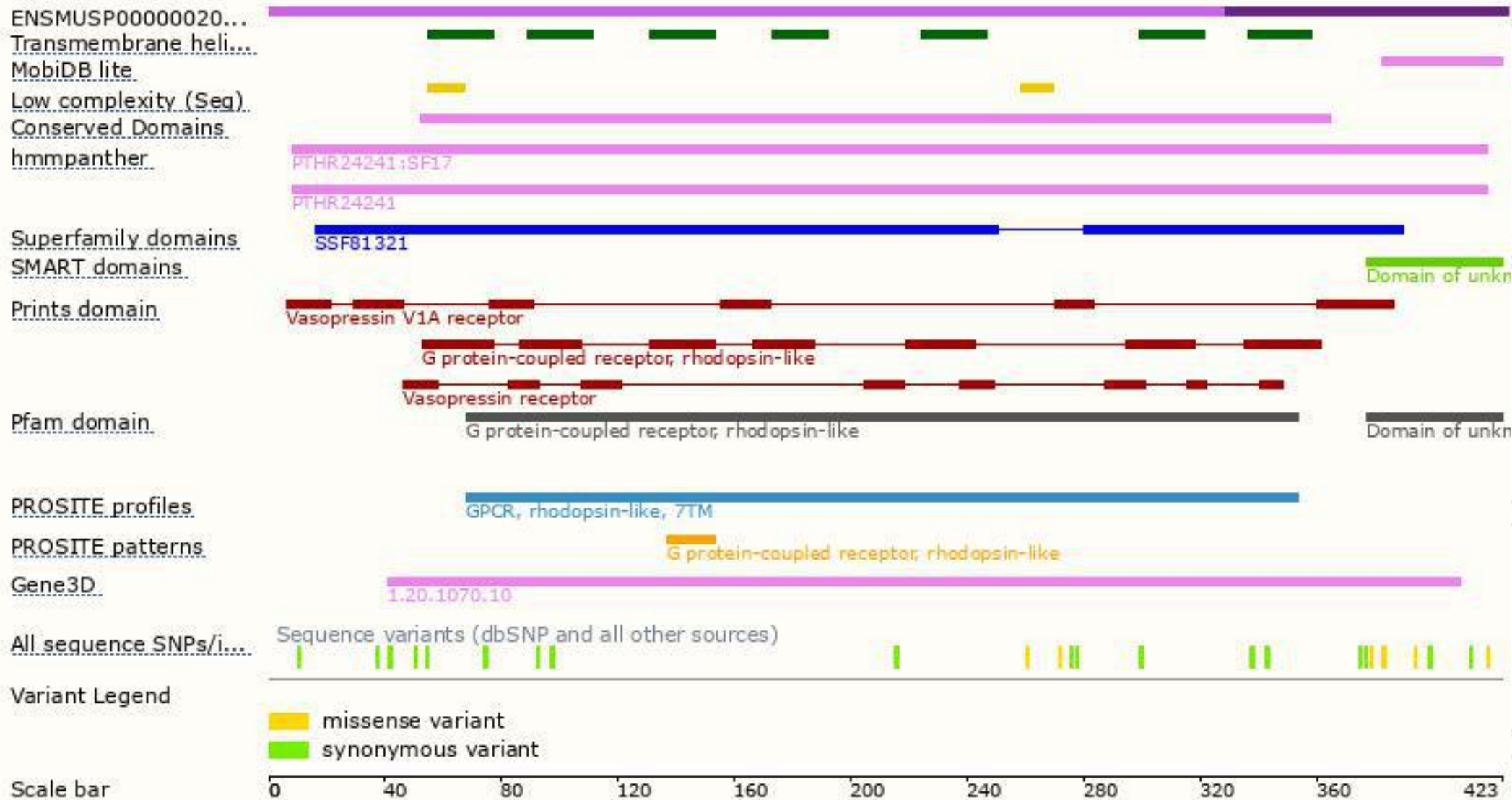
The strategy is based on the design of *Avpr1a-201* transcript, The transcription is shown below



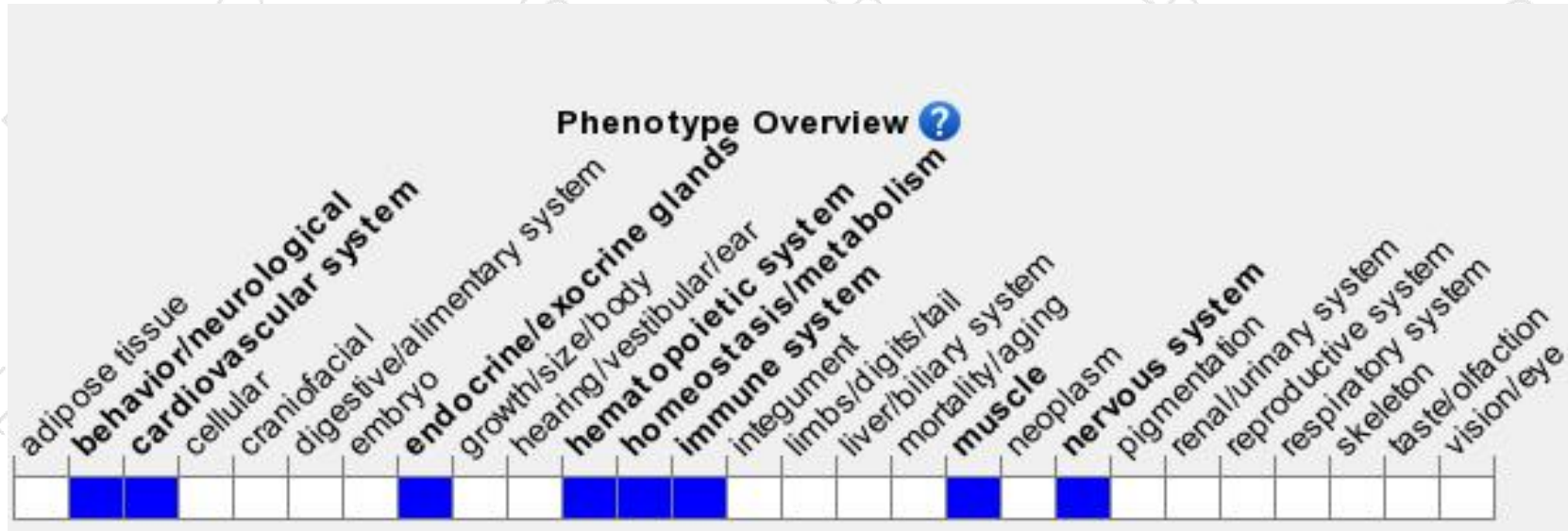
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for disruptions in this gene display a stimulus processing deficit similar to that seen in schizophrenia. Anxiety-like behaviors are reduced in males but not females. B cell development is also affected.

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

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