

Htr1a Cas9-CKO Strategy

Designer:

Huan Fan

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Project Overview

Project Name

Htr1a

Project type

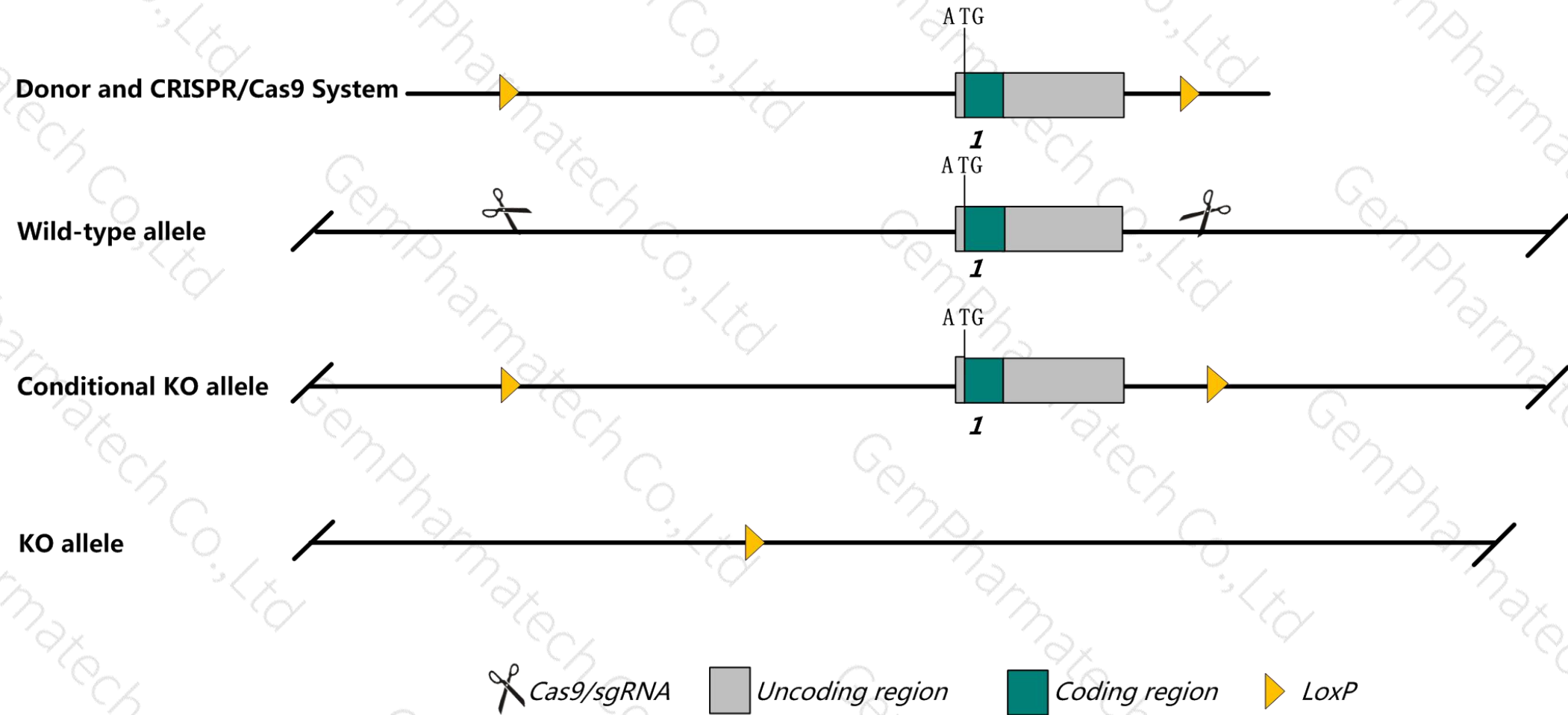
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Htr1a* gene. The schematic diagram is as follows:



- The *Htr1a* gene has 1 transcript. According to the structure of *Htr1a* gene, exon1 of *Htr1a*-201 transcript is recommended as the knockout region. The region contains start codon ATG coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Htr1a* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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 or cell types.

- According to the existing MGI data , Homozygotes for targeted null mutations show a common phenotype, including augmented anxious-like behavior in the elevated plus-maze, open-field, and novel object tests, reduced immobility in the forced-swim or tail-suspension test, and changes in density of 5-HTT binding in several brain regions.
- The *Htr1a* gene is located on the Chr13. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Htr1a 5-hydroxytryptamine (serotonin) receptor 1A [*Mus musculus* (house mouse)]

Gene ID: 15550, updated on 2-Jul-2019

Summary



Official Symbol	Htr1a provided by MGI
Official Full Name	5-hydroxytryptamine (serotonin) receptor 1A provided by MGI
Primary source	MGI:MGI:96273
See related	Ensembl:ENSMUSG00000021721
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	Gpcr18
Orthologs	human all

Transcript information (Ensembl)

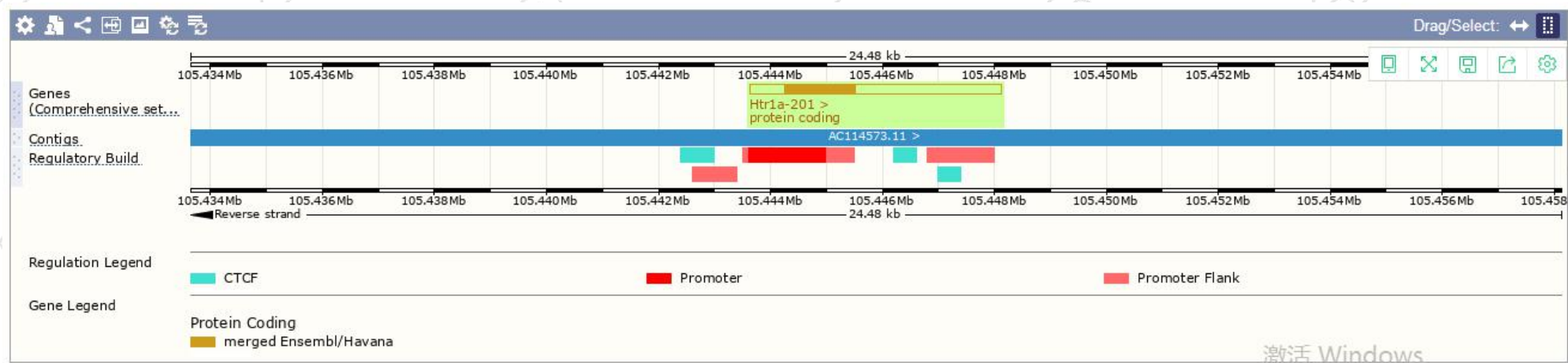
The gene has 1 transcript, and the transcript is shown below:

Show/hide columns (1 hidden)							Filter		
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags		
Htr1a-201	ENSMUST00000022235.5	4484	421aa	Protein coding	CCDS26756	Q64264	TSL:NA	GENCODE basic	APPRIS P1

The strategy is based on the design of *Htr1a*-201 transcript, The transcription is shown below



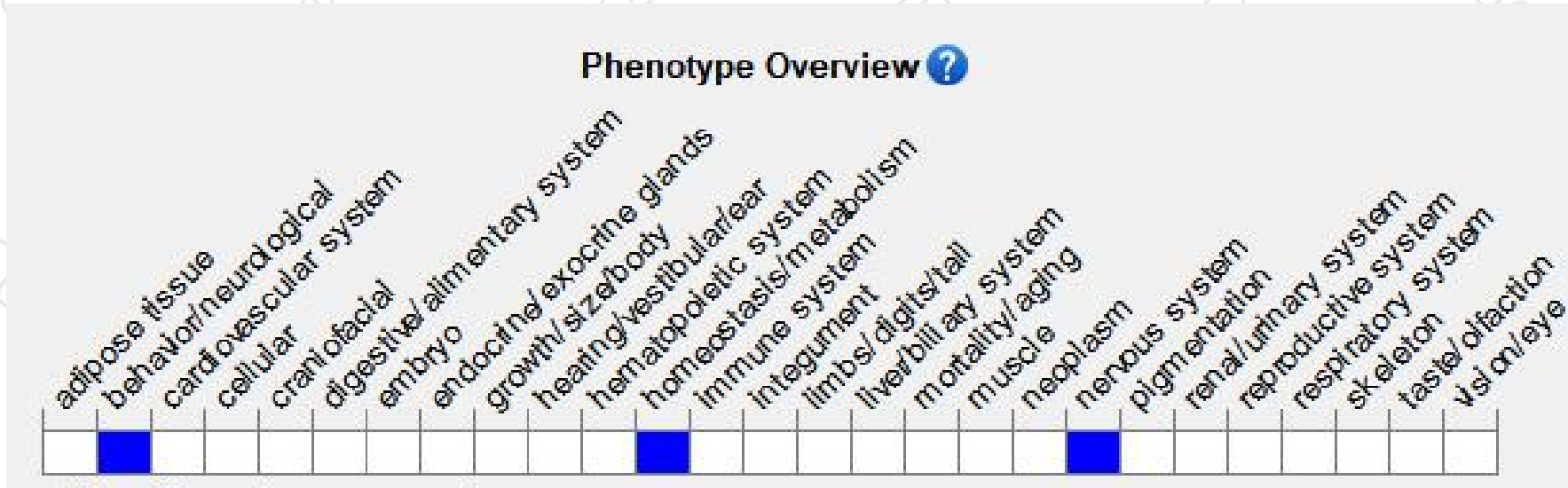
Genomic location distribution



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, Mutations in this locus affect cell-cycle regulation and apoptosis. Null homozygotes show high, early-onset tumor incidence; some have persistent hyaloid vasculature and cataracts. Truncated or temperature-sensitive alleles cause early aging phenotypes.

If you have any questions, you are welcome to inquire.
Tel: 400-9660890



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