

Atxn3 Cas9-KO Strategy

Designer:

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Design Date:

2018/5/31

Project Overview

Project Name

Atxn3

Project type

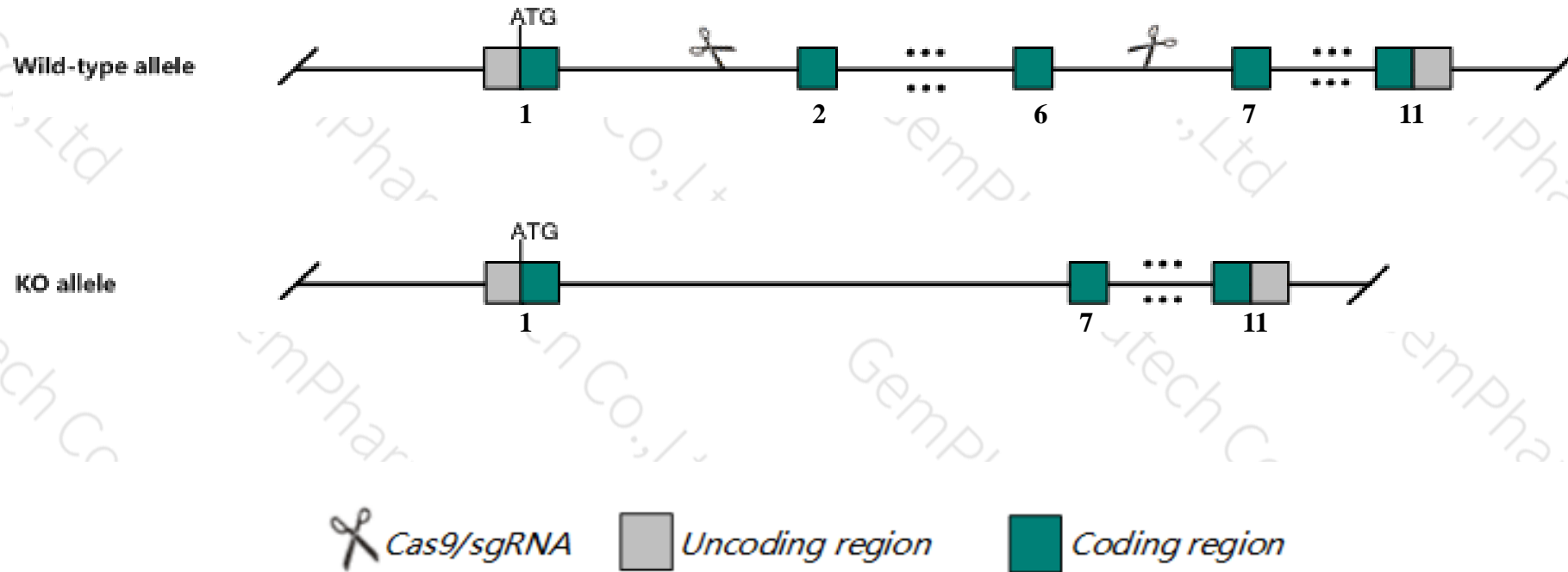
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Atxn3* gene. The schematic diagram is as follows:



- The *Atxn3* gene has 5 transcripts. According to the structure of *Atxn3* gene, exon2-exon6 of *Atxn3-201* (ENSMUST00000021606.11) transcript is recommended as the knockout region. The region contains 451bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Atxn3* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, Decreased exploratory behavior is reported for mice homozygous for a disruption of this marker.
- The *Atxn3* gene is located on the Chr12. 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)

Atxn3 ataxin 3 [Mus musculus (house mouse)]

Gene ID: 110616, updated on 9-Mar-2019

Summary



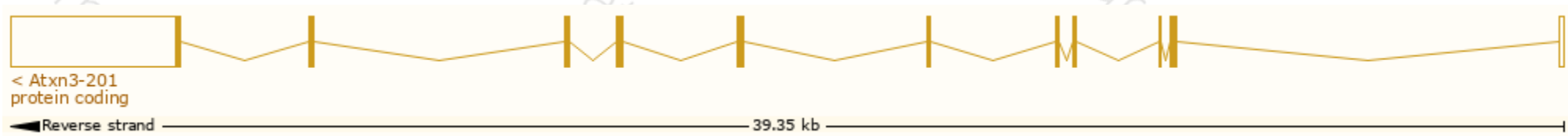
Official Symbol	Atxn3 provided by MGI
Official Full Name	ataxin 3 provided by MGI
Primary source	MGI:MGI:1099442
See related	Ensembl:ENSMUSG00000021189
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2210008M02Rik, AI463012, AI647473, ATX3, MJD1, Mjd, Sca3, ataxin-3
Expression	Ubiquitous expression in testis adult (RPKM 13.9), bladder adult (RPKM 6.4) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

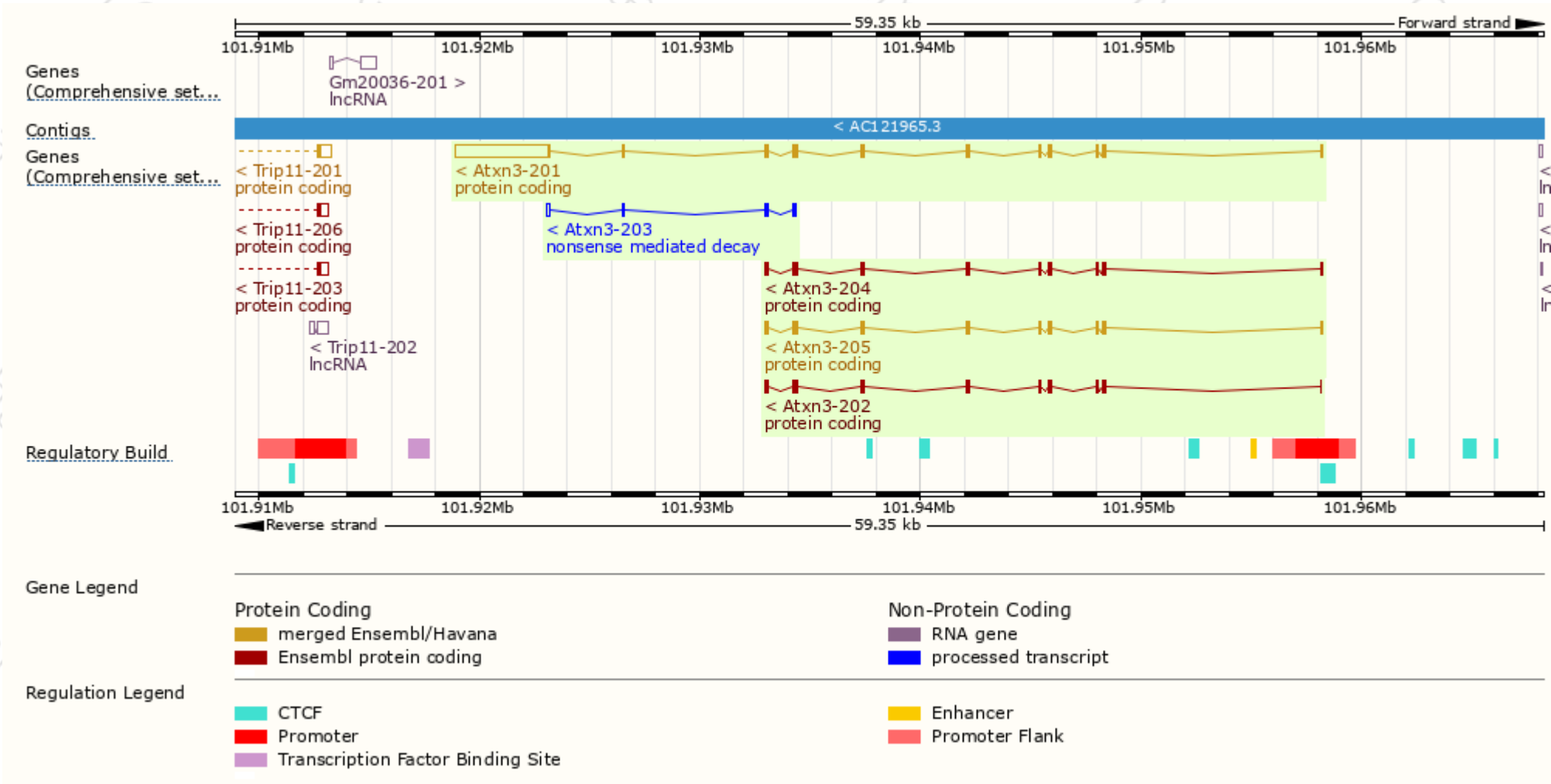
The gene has 5 transcripts,all transcripts are shown below:

Atxn3-201	ENSMUST00000021606.11	5363	355aa	Protein coding	CCDS26115	Q546X9 Q9CVD2	TSL:1 GENCODE basic APPRIS P3
Atxn3-205	ENSMUST00000161011.7	1000	291aa	Protein coding	CCDS49144	E9Q717	TSL:1 GENCODE basic APPRIS ALT2
Atxn3-204	ENSMUST00000160251.7	998	296aa	Protein coding	-	Q5M8S1	TSL:1 GENCODE basic
Atxn3-202	ENSMUST00000159883.1	879	287aa	Protein coding	-	F6T5L3	CDS 5' incomplete TSL:5
Atxn3-203	ENSMUST00000160186.1	439	69aa	Nonsense mediated decay	-	F6TRN1	CDS 5' incomplete TSL:5

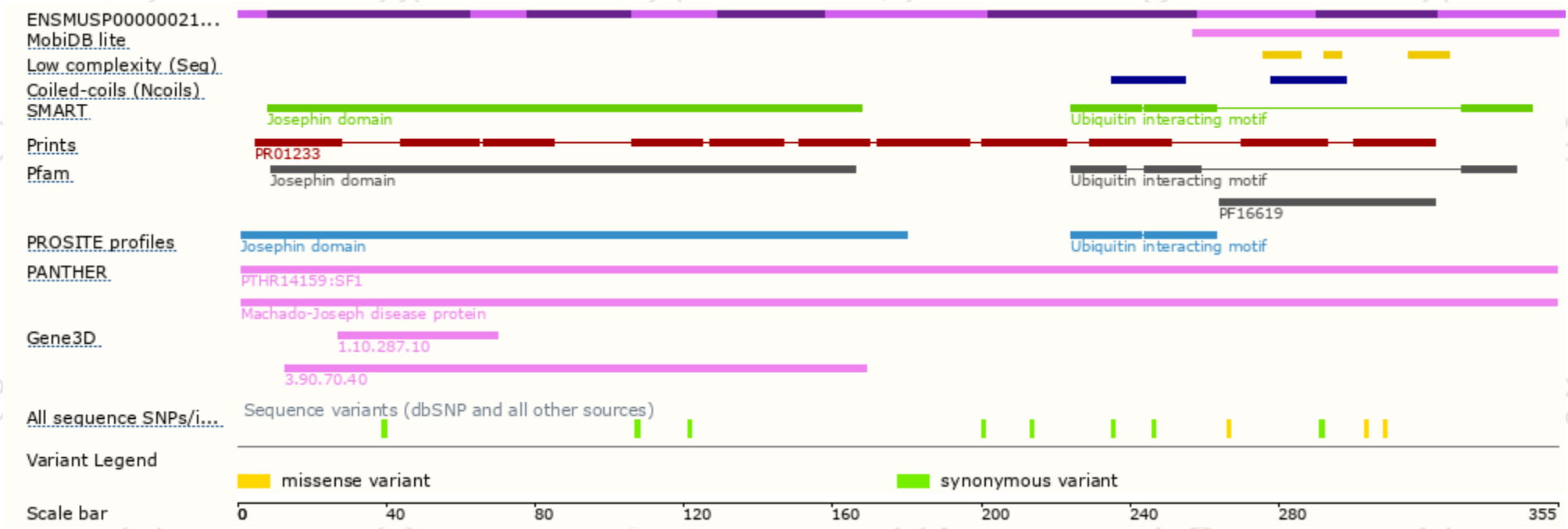
The strategy is based on the design of *Atxn3-201* transcript,The transcription is shown below



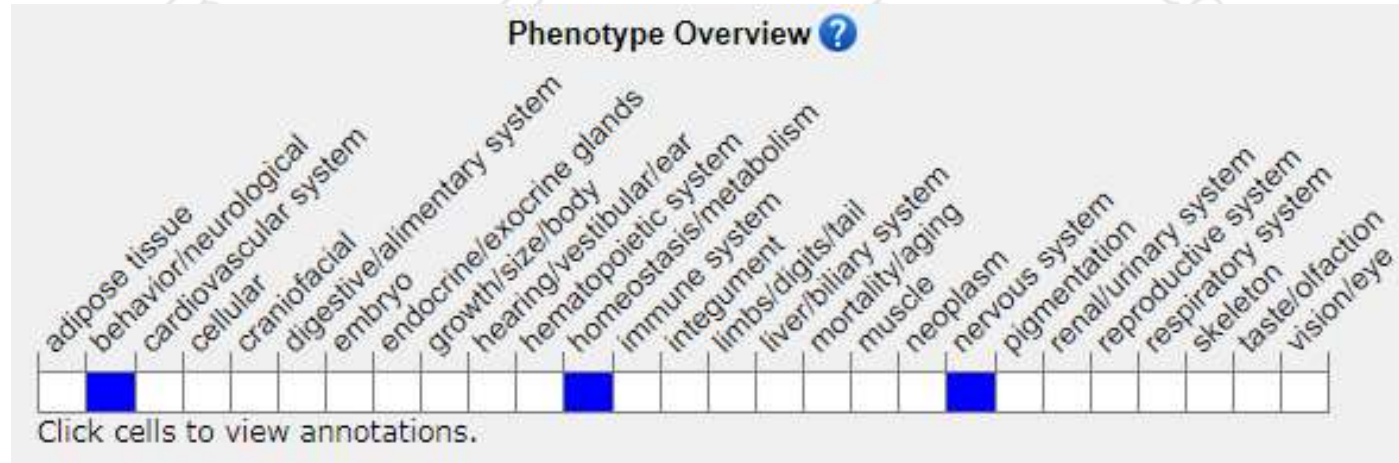
Genomic location distribution



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, Decreased exploratory behavior is reported for mice homozygous for a disruption of this marker.

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

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