

# *Atg4c* Cas9-KO Strategy

Designer: Yanhua Shen  
Reviewer: Xueting Zhang  
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# Project Overview

**Project Name**

*Atg4c*

**Project type**

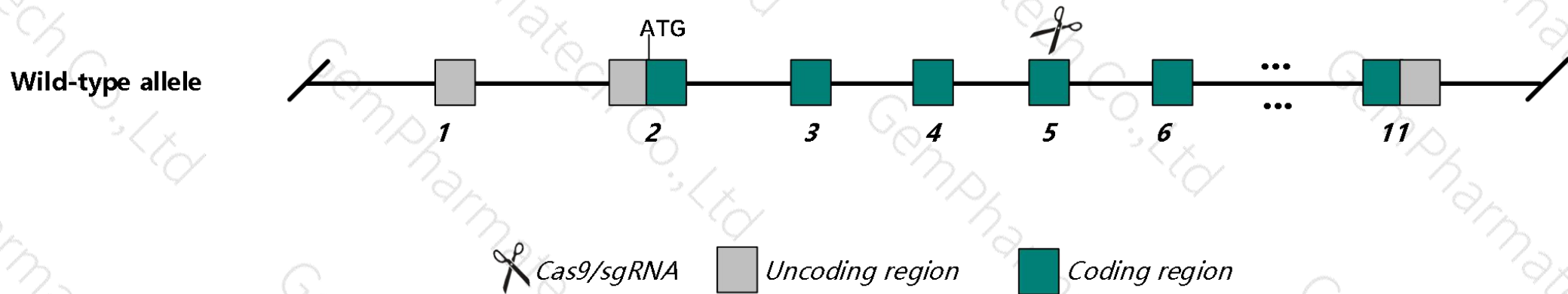
**Cas9-KO**

**Strain background**

**C57BL/6N**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Atg4c* gene. The schematic diagram is as follows:



- In this project we use CRISPR/Cas9 technology to modify *Atg4c* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6N 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/6N mice.

- According to the existing MGI data, Mice homozygous for a knock-out allele show a higher incidence of chemically-induced fibrosarcomas, and exhibit both a significant reduction of autophagic activity in the diaphragm muscle as well as decreased locomotor activity after prolonged starvation.
- The *Atg4c* gene is located on the Chr4. 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)

## Atg4c autophagy related 4C, cysteine peptidase [ *Mus musculus* (house mouse) ]




Gene ID: 242557, updated on 12-Aug-2019

### Summary

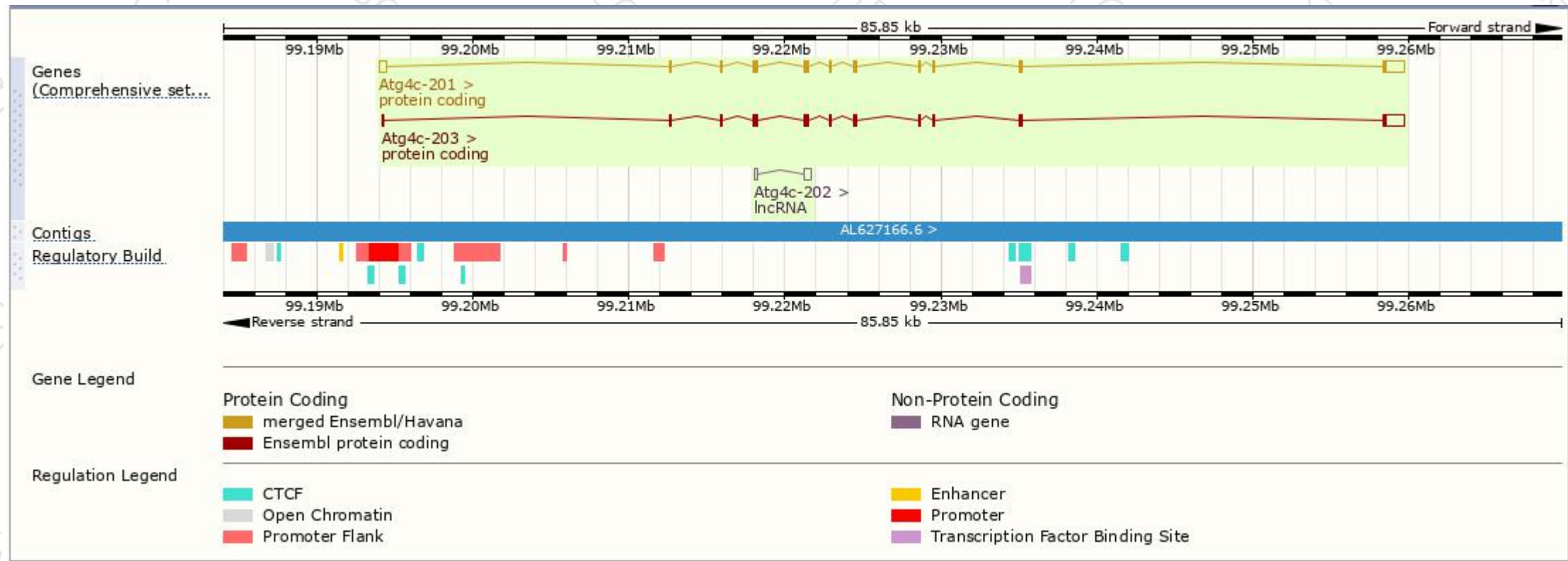
Official Symbol	Atg4c provided by MGI
Official Full Name	autophagy related 4C, cysteine peptidase provided by MGI
Primary source	<a href="#">MGI:MGI:2651854</a>
See related	<a href="#">Ensembl:ENSMUSG00000028550</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Apg4c; Autl1; Apg4-C; Atg4cl
Expression	Ubiquitous expression in cortex adult (RPKM 2.2), frontal lobe adult (RPKM 1.8) and 26 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

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

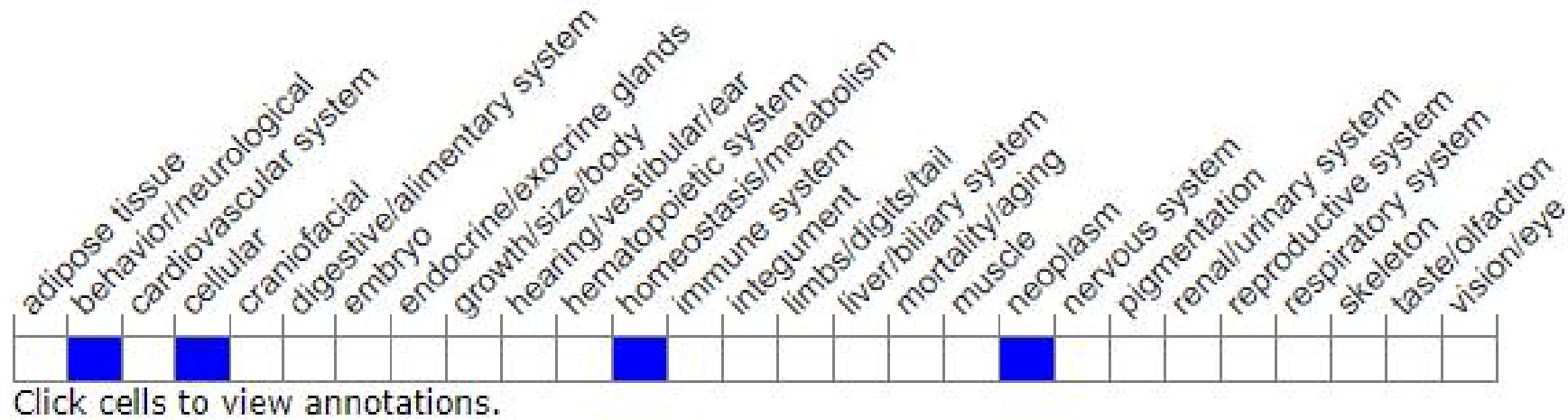
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Atg4c-201	<a href="#">ENSMUST00000030279.14</a>	3178	<a href="#">458aa</a>	 Protein coding	<a href="#">CCDS18382</a>	<a href="#">Q811C2</a>	TSL:1 GENCODE basic APPRIS P1
Atg4c-203	<a href="#">ENSMUST00000180278.1</a>	2792	<a href="#">458aa</a>	 Protein coding	<a href="#">CCDS18382</a>	<a href="#">Q811C2</a>	TSL:5 GENCODE basic APPRIS P1
Atg4c-202	<a href="#">ENSMUST00000152121.1</a>	612	No protein	 lncRNA	-	-	TSL:3

# Genomic location distribution





# 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 a knock-out allele show a higher incidence of chemically-induced fibrosarcomas, and exhibit both a significant reduction of autophagic activity in the diaphragm muscle as well as decreased locomotor activity after prolonged starvation.

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

Tel: 025-5864 1534

