

# *Eif4a3* Cas9-KO Strategy

**Designer:** Daohua Xu

**Reviewer:** Huimin Su

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# Project Overview

**Project Name**

*Eif4a3*

**Project type**

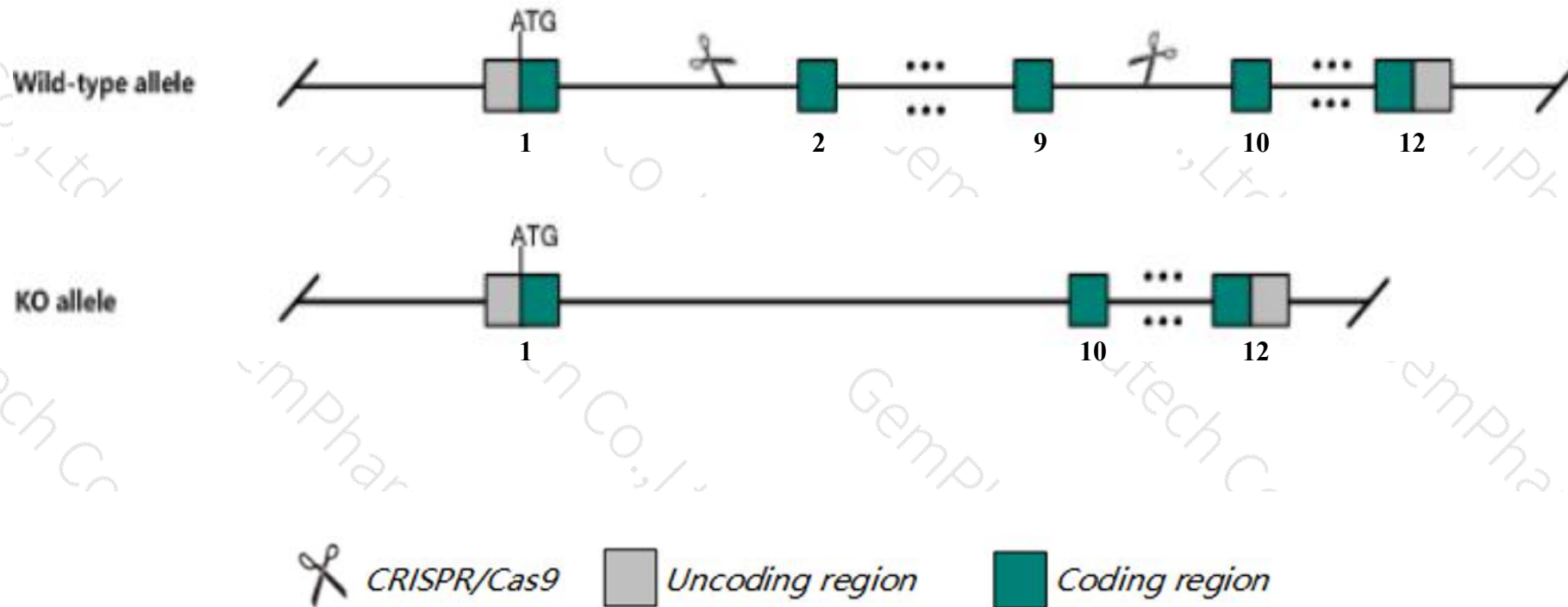
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Eif4a3* gene. The schematic diagram is as follows:



# Technical routes

- The *Eif4a3* gene has 6 transcripts. According to the structure of *Eif4a3* gene, exon2-exon9 of *Eif4a3-201* (ENSMUST00000026667.14) transcript is recommended as the knockout region. The region contains 814bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Eif4a3* gene. The brief process is as follows: CRISPR/Cas9 system

- The *Eif4a3* gene is located on the Chr11. 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)

## Eif4a3 eukaryotic translation initiation factor 4A3 [Mus musculus (house mouse)]

Gene ID: 192170, updated on 13-Mar-2020

### Summary



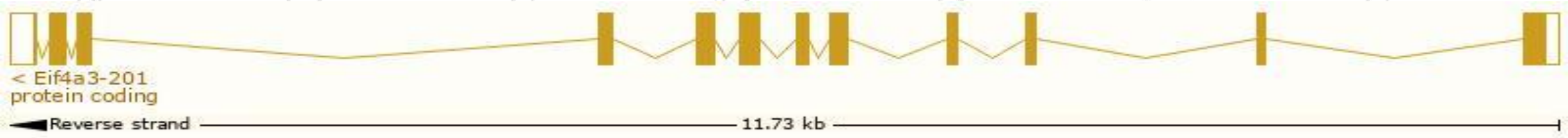
<b>Official Symbol</b>	Eif4a3 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	eukaryotic translation initiation factor 4A3 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1923731</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG000000025580</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	PROVISIONAL
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	2400003O03Rik, Ddx48, eIF4A-III, mKIAA0111
<b>Expression</b>	Ubiquitous expression in CNS E11.5 (RPKM 64.0), limb E14.5 (RPKM 53.1) and 28 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

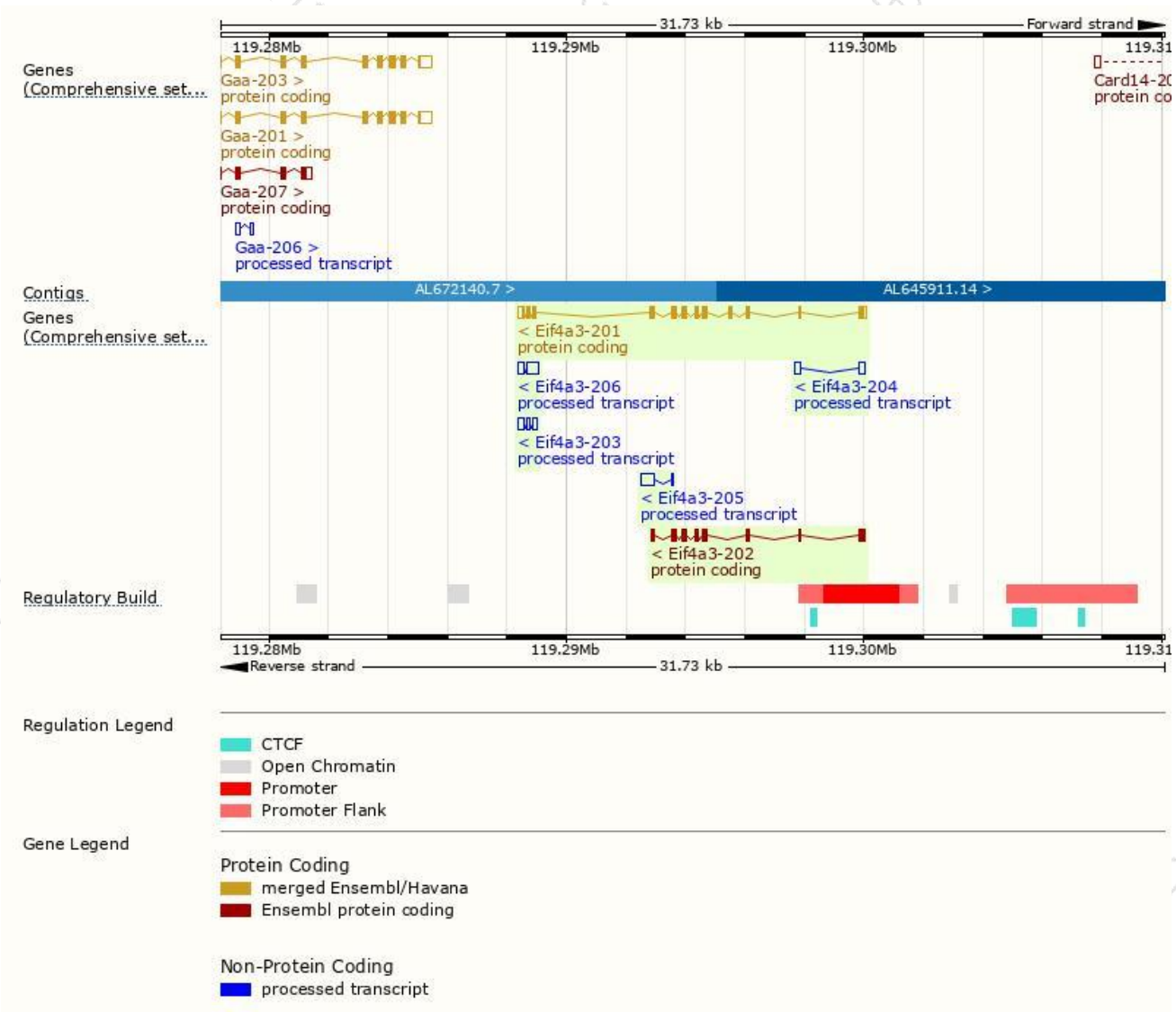
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Eif4a3-201	<a href="#">ENSMUST00000026667.14</a>	1509	<a href="#">411aa</a>	Protein coding	<a href="#">CCDS25714</a>	<a href="#">Q91VC3</a>	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Eif4a3-202	<a href="#">ENSMUST00000106253.1</a>	916	<a href="#">299aa</a>	Protein coding	-	<a href="#">A2AFK7</a>	CDS 3' incomplete TSL:5
Eif4a3-206	<a href="#">ENSMUST00000138849.1</a>	613	No protein	Processed transcript	-	-	TSL:2
Eif4a3-205	<a href="#">ENSMUST00000135294.1</a>	473	No protein	Processed transcript	-	-	TSL:3
Eif4a3-203	<a href="#">ENSMUST00000129044.7</a>	466	No protein	Processed transcript	-	-	TSL:2
Eif4a3-204	<a href="#">ENSMUST00000134743.1</a>	377	No protein	Processed transcript	-	-	TSL:2

The strategy is based on the design of *Eif4a3-201* transcript,the transcription is shown below:



# Genomic location distribution

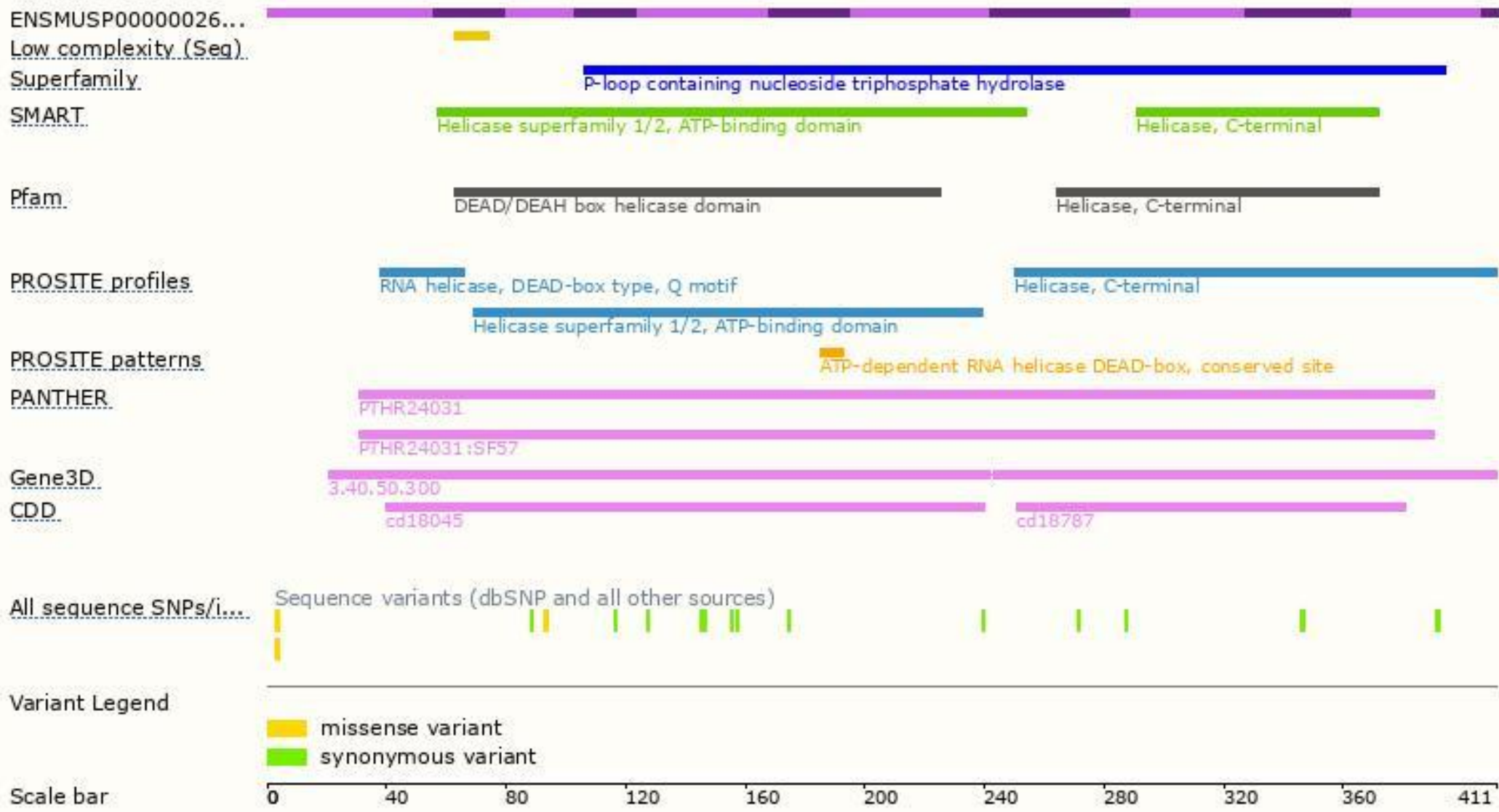




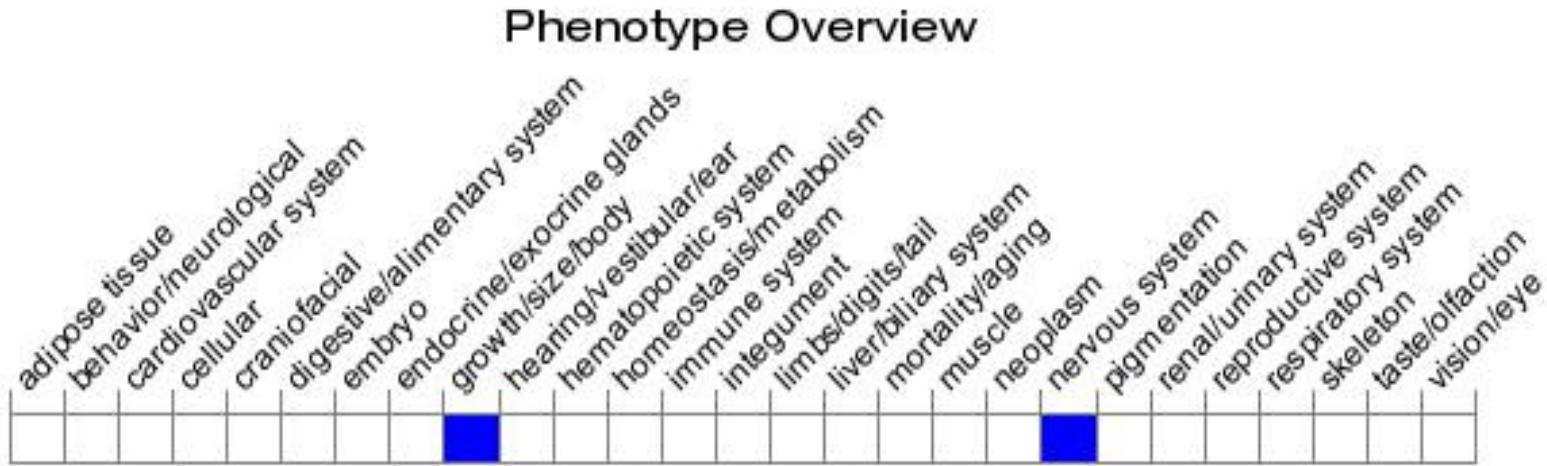
# Protein domain



集萃药康  
GemPharmatech



# Mouse phenotype description(MGI )



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

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

Tel: 400-9660890

