

# *Nrg4* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Nrg4*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nrg4* gene. The schematic diagram is as follows:



- The *Nrg4* gene has 13 transcripts. According to the structure of *Nrg4* gene, exon3-exon5 of *Nrg4-213* (ENSMUST00000164721.7) transcript is recommended as the knockout region. The region contains most of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nrg4* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, A gene trap insertion into an intron of this gene results in no obvious phenotype.
- Transcript *Nrg4-205* lncRNA may not be affected.
- The *Nrg4* gene is located on the Chr9. 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.



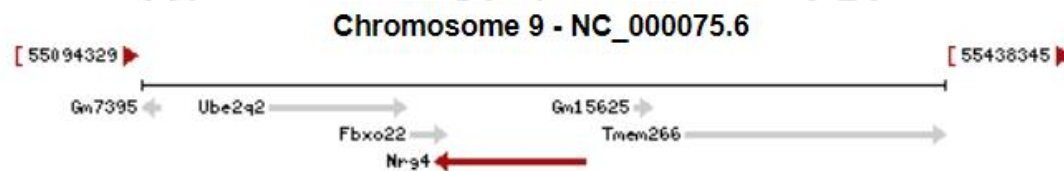
# Gene information (NCBI)

## Nrg4 neuregulin 4 [ *Mus musculus* (house mouse) ]

Gene ID: 83961, updated on 29-Oct-2019

### Summary

<b>Official Symbol</b>	Nrg4 provided by MGI
<b>Official Full Name</b>	neuregulin 4 provided by MGI
<b>Primary source</b>	MGI:MGI:1933833
<b>See related</b>	Ensembl:ENSMUSG000000032311
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<i>Mus musculus</i>
<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>	AI552600
<b>Expression</b>	Broad expression in mammary gland adult (RPKM 13.4), subcutaneous fat pad adult (RPKM 12.2) and 27 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

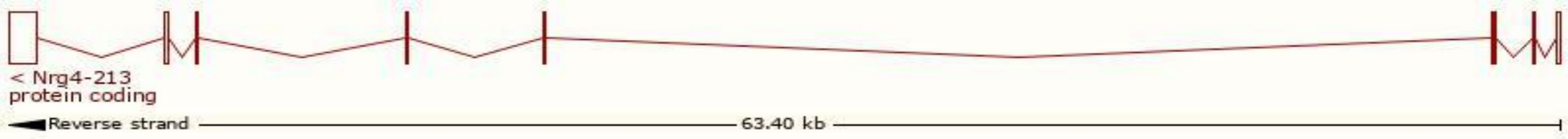


# Transcript information (Ensembl)

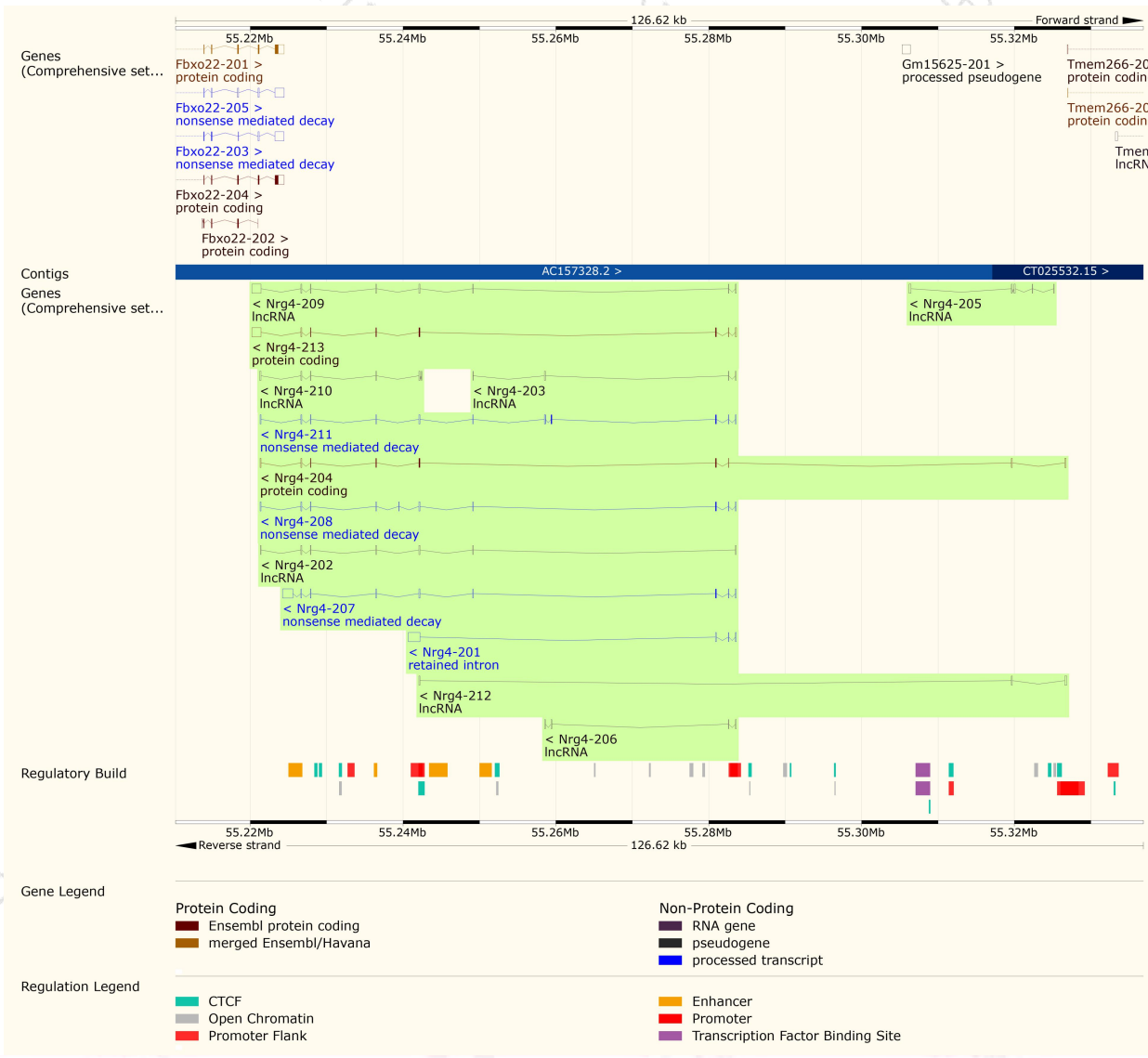
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Nrg4-213	<a href="#">ENSMUST00000164721.7</a>	1927	<a href="#">115aa</a>	<a href="#">ENSMUSP00000130929.1</a>	Protein coding	<a href="#">CCDS52801</a>	<a href="#">Q9WTX4</a>	TSL:5 GENCODE basic APPRIS P1
Nrg4-204	<a href="#">ENSMUST00000130158.7</a>	1000	<a href="#">115aa</a>	<a href="#">ENSMUSP00000115247.1</a>	Protein coding	<a href="#">CCDS52801</a>	<a href="#">Q9WTX4</a>	TSL:5 GENCODE basic APPRIS P1
Nrg4-207	<a href="#">ENSMUST00000135531.1</a>	2095	<a href="#">37aa</a>	<a href="#">ENSMUSP00000114412.1</a>	Nonsense mediated decay	-	<a href="#">D6RE18</a>	TSL:1
Nrg4-211	<a href="#">ENSMUST00000145784.7</a>	1145	<a href="#">80aa</a>	<a href="#">ENSMUSP00000115851.1</a>	Nonsense mediated decay	-	<a href="#">I6L9B2</a>	TSL:2
Nrg4-208	<a href="#">ENSMUST00000137675.7</a>	942	<a href="#">37aa</a>	<a href="#">ENSMUSP00000114336.1</a>	Nonsense mediated decay	-	<a href="#">D6RE18</a>	TSL:1
Nrg4-201	<a href="#">ENSMUST00000114306.1</a>	1774	No protein	-	Retained intron	-	-	TSL:2
Nrg4-209	<a href="#">ENSMUST00000139261.7</a>	1878	No protein	-	lncRNA	-	-	TSL:1
Nrg4-210	<a href="#">ENSMUST00000144939.7</a>	721	No protein	-	lncRNA	-	-	TSL:3
Nrg4-205	<a href="#">ENSMUST00000133659.1</a>	674	No protein	-	lncRNA	-	-	TSL:3
Nrg4-202	<a href="#">ENSMUST00000126368.7</a>	654	No protein	-	lncRNA	-	-	TSL:3
Nrg4-212	<a href="#">ENSMUST00000156112.7</a>	519	No protein	-	lncRNA	-	-	TSL:3
Nrg4-206	<a href="#">ENSMUST00000134183.1</a>	381	No protein	-	lncRNA	-	-	TSL:3
Nrg4-203	<a href="#">ENSMUST00000128020.1</a>	347	No protein	-	lncRNA	-	-	TSL:3

The strategy is based on the design of *Nrg4-213* transcript,The transcription is shown below

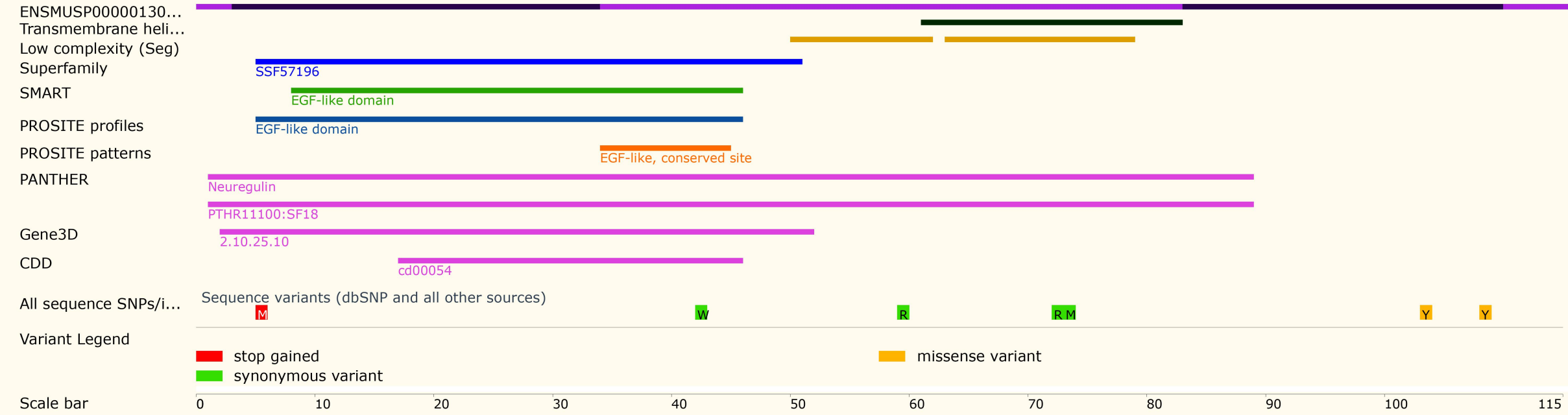


# Genomic location distribution





# Protein domain



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

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