

Homer2 Cas9-KO Strategy

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Project Overview

Project Name

Homer2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Homer2* gene. The schematic diagram is as follows:



- The *Homer2* gene has 9 transcripts. According to the structure of *Homer2* gene, exon4-exon5 of *Homer2*-202 (ENSMUST00000098326.2) transcript is recommended as the knockout region. The region contains 233bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Homer2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutants exhibit an increase in intracellular calcium concentration and in the frequency of intracellular calcium oscillations in pancreatic acinar cells.
- Transcript *Homer2*-208 may not be affected.
- The *Homer2* gene is located on the Chr7. 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)

Homer2 homer scaffolding protein 2 [*Mus musculus* (house mouse)]

Gene ID: 26557, updated on 10-Oct-2019

Summary

- Official Symbol** Homer2 provided by [MGI](#)
- Official Full Name** homer scaffolding protein 2 provided by [MGI](#)
- Primary source** [MGI:MGI:1347354](#)
- See related** [Ensembl:ENSMUSG00000025813](#)
- 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** CPD; Vesi-2; AW539445; 9330120H11Rik
- Expression** Broad expression in frontal lobe adult (RPKM 7.6), cortex adult (RPKM 4.6) and 20 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 7; 7 D3

See Homer2 in [Genome Data Viewer](#)

Exon count: 11

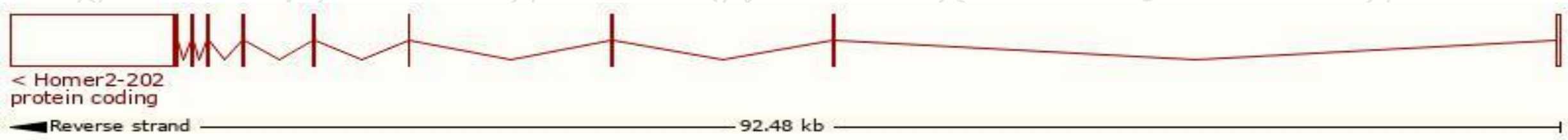
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	7	NC_000073.6 (81600481..81706925, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	7	NC_000073.5 (88745367..88851811, complement)

Transcript information (Ensembl)

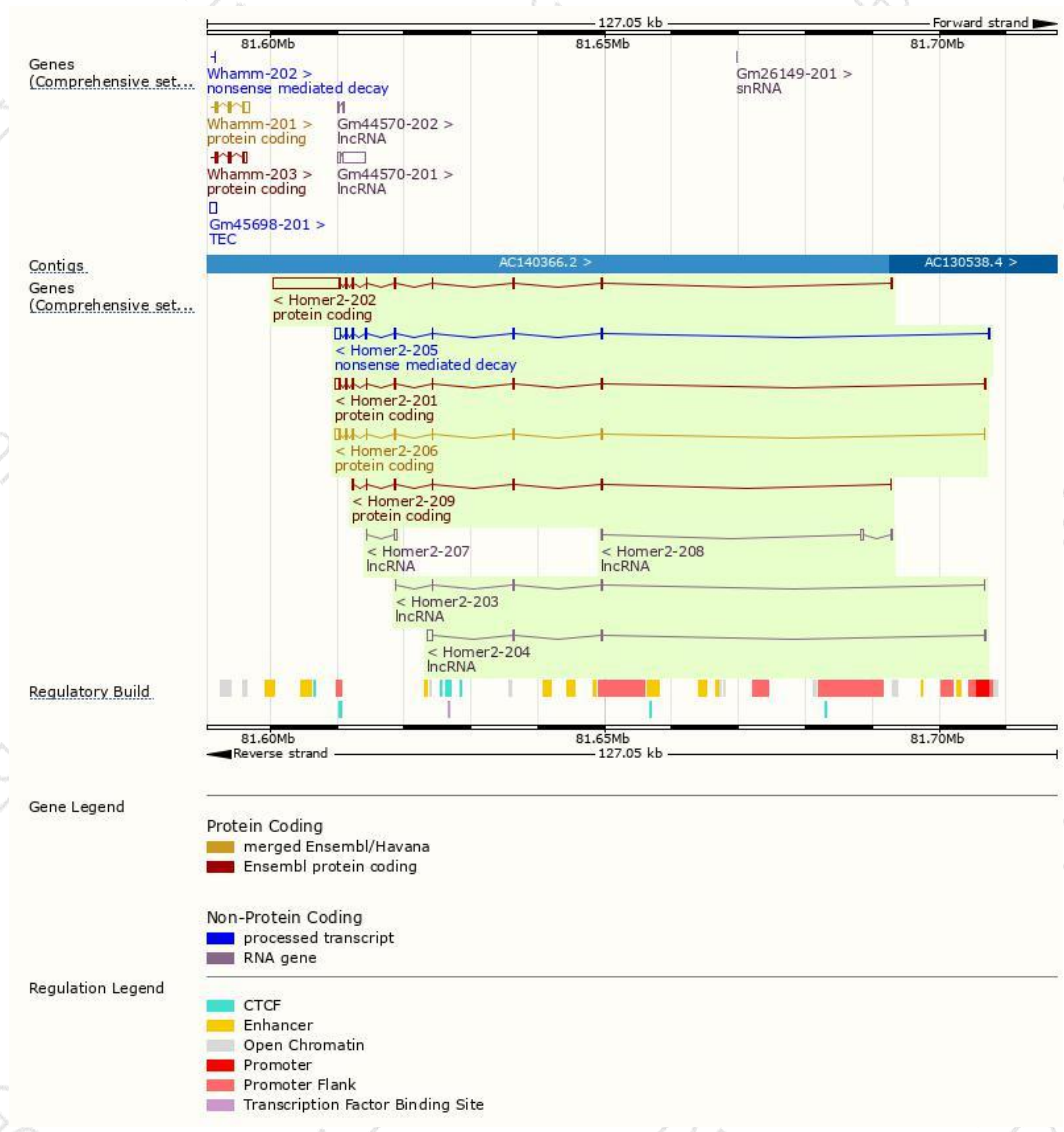
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Homer2-202	ENSMUST00000098326.2	10982	290aa	Protein coding	CCDS52284	E9Q4F9	TSL:5 GENCODE basic
Homer2-201	ENSMUST00000026922.14	1736	343aa	Protein coding	CCDS85329	Q9QWW1	TSL:1 GENCODE basic APPRIS ALT 1
Homer2-206	ENSMUST000000207983.1	1634	354aa	Protein coding	CCDS40009	Q9QWW1	TSL:1 GENCODE basic APPRIS P3
Homer2-209	ENSMUST000000208937.1	798	179aa	Protein coding	-	A0A140LHR9	CDS 3' incomplete TSL:3
Homer2-205	ENSMUST000000207371.1	1818	252aa	Nonsense mediated decay	-	A0A140LJ06	TSL:1
Homer2-204	ENSMUST000000207289.1	1234	No protein	lncRNA	-	-	TSL:1
Homer2-208	ENSMUST000000208107.1	581	No protein	lncRNA	-	-	TSL:2
Homer2-207	ENSMUST000000207991.1	478	No protein	lncRNA	-	-	TSL:3
Homer2-203	ENSMUST000000207039.1	457	No protein	lncRNA	-	-	TSL:2

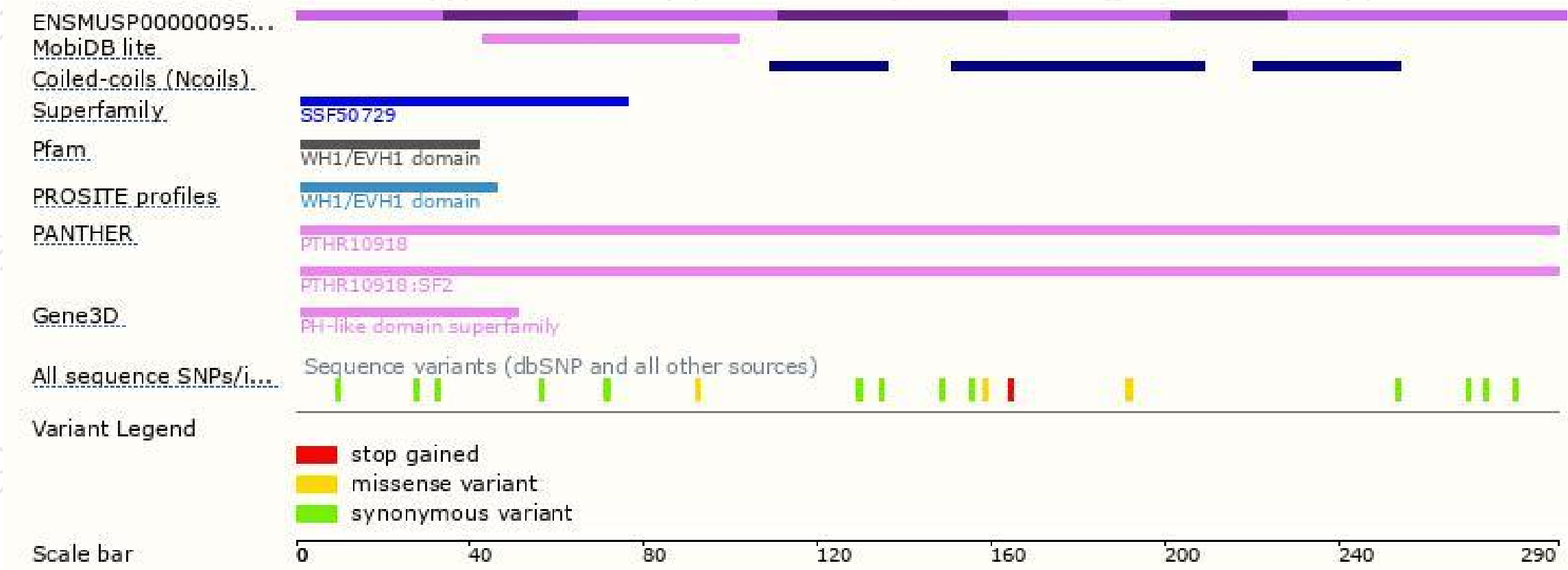
The strategy is based on the design of *Homer2-202* transcript,The transcription is shown below



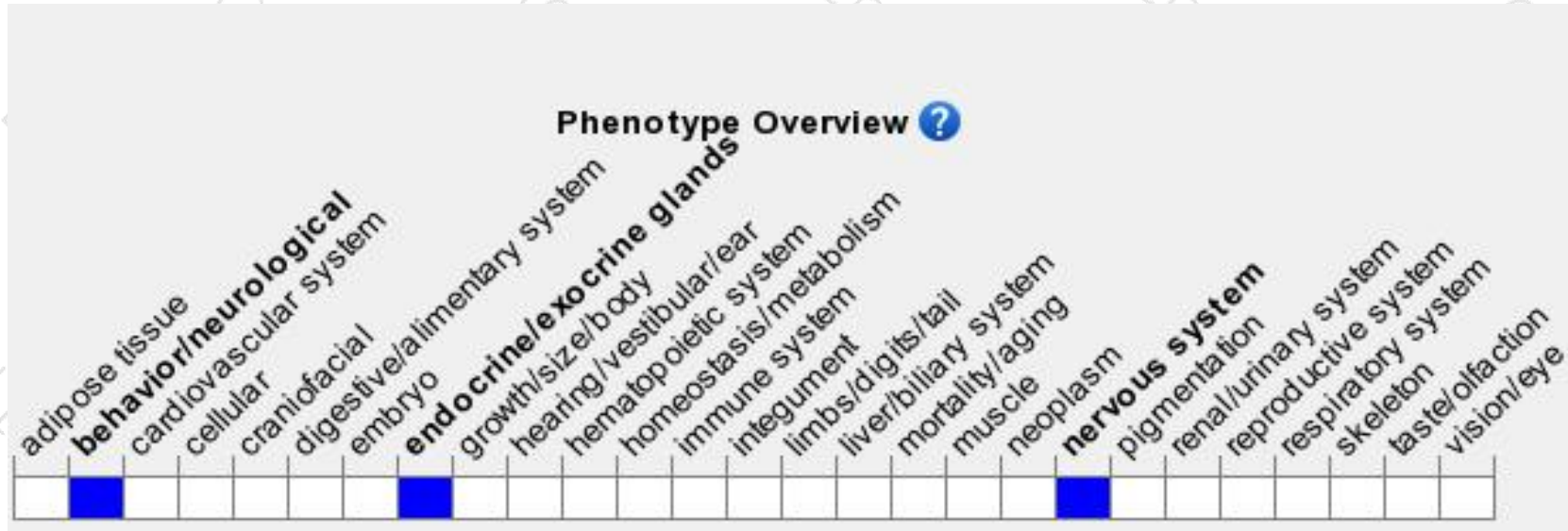
Genomic location distribution



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, Homozygous mutants exhibit an increase in intracellular calcium concentration and in the frequency of intracellular calcium oscillations in pancreatic acinar cells.

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

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