

Herc2 Cas9-KO Strategy

Designer:

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Design Date:

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Project Overview

Project Name

Herc2

Project type

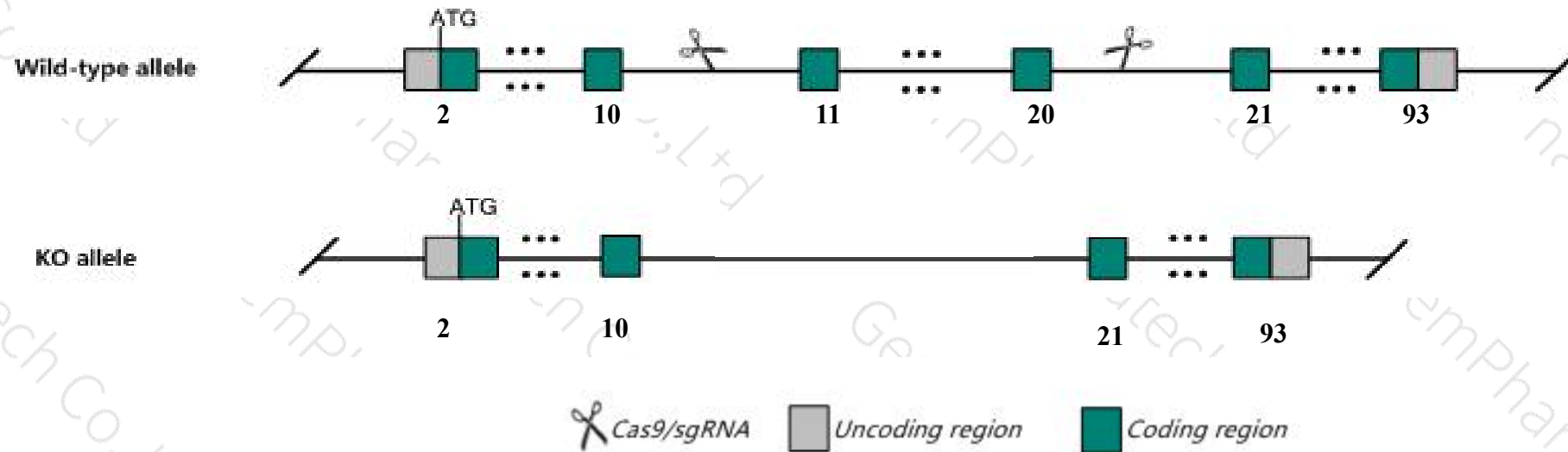
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Herc2* gene. The schematic diagram is as follows:



- The *Herc2* gene has 8 transcripts. According to the structure of *Herc2* gene, exon11-exon20 of *Herc2-201* (ENSMUST00000076226.12) transcript is recommended as the knockout region. The region contains 1793bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Herc2* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9, sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, Homozygotes for null mutations exhibit runting, nervousness, and incoordination. Males are sterile with sperm abnormalities, while females show reduced fertility and impaired maternal ability. Also see alleles at the *Oca2* (p) locus for deletions that encompass the *Herc2* gene.
- Transcript *Herc2-204*, *Herc2-205* may not be affected.
- The *Herc2* 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Herc2 HECT and RLD domain containing E3 ubiquitin protein ligase 2 [*Mus musculus* (house mouse)]

Gene ID: 15204, updated on 10-Aug-2019

Summary

- Official Symbol
- Herc2 provided by MGI
- Official Full Name
- HECT and RLD domain containing E3 ubiquitin protein ligase 2 provided by MGI
- Primary source
- MGI:MGI:103234
- See related
- Ensembl:ENSMUSG00000030451
- 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
- rjs; jdf2; D15F32S1h; mKIAA0393; D7H15F32S1; D7H15F37S1
- Expression
- Ubiquitous expression in CNS E18 (RPKM 12.1), cortex adult (RPKM 11.4) and 28 other tissues [See more](#)
- Orthologs
- [human](#) [all](#)

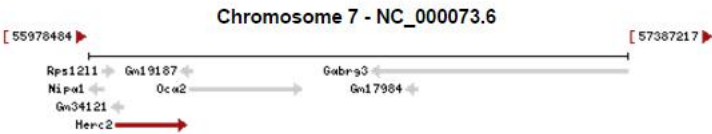
Genomic context

Location: 7 B5; 7 33.42 cM

See Herc2 in [Genome Data Viewer](#)

Exon count: 94

Annotation release	Status	Assembly	Chr	Location
106	current	GRCm38.p4 (GCF_000001635.24)	7	NC_000073.6 (56050155..56231800)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	7	NC_000073.5 (63305525..63487170)



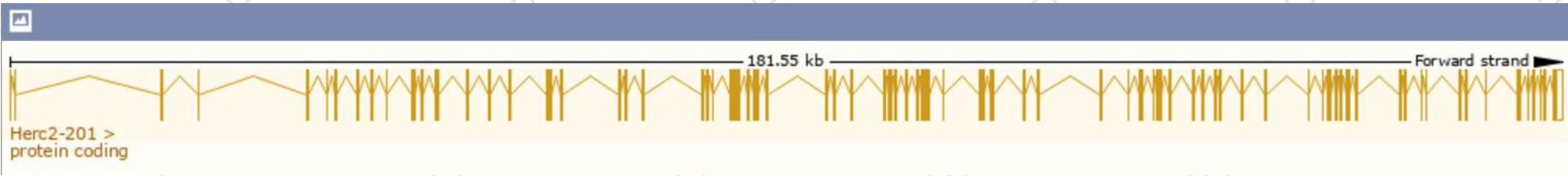
Transcript information (Ensembl)

The gene has 8 transcripts,all transcripts are shown below:

Show/hide columns (1 hidden) Filter

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Herc2-202	ENSMUST00000164095.2	15261	4836aa	Protein coding	CCDS21318	Q4U2R1	TSL:1 GENCODE basic APPRIS P2
Herc2-201	ENSMUST00000076226.12	15250	4836aa	Protein coding	CCDS21318	Q4U2R1	TSL:1 GENCODE basic APPRIS P2
Herc2-203	ENSMUST00000205303.1	14403	4800aa	Protein coding	-	Q4U2R1	TSL:5 GENCODE basic APPRIS ALT2
Herc2-207	ENSMUST00000206537.1	3009	965aa	Protein coding	-	A0A0U1RPZ3	CDS 3' incomplete TSL:1
Herc2-205	ENSMUST00000205678.1	501	167aa	Protein coding	-	A0A0U1RNG9	CDS 5' and 3' incomplete TSL:1
Herc2-204	ENSMUST00000205653.1	476	40aa	Protein coding	-	A0A0U1RP01	CDS 3' incomplete TSL:3
Herc2-208	ENSMUST00000206990.2	803	No protein	Retained intron	-	-	TSL:5
Herc2-206	ENSMUST00000206101.1	589	No protein	lncRNA	-	-	TSL:5

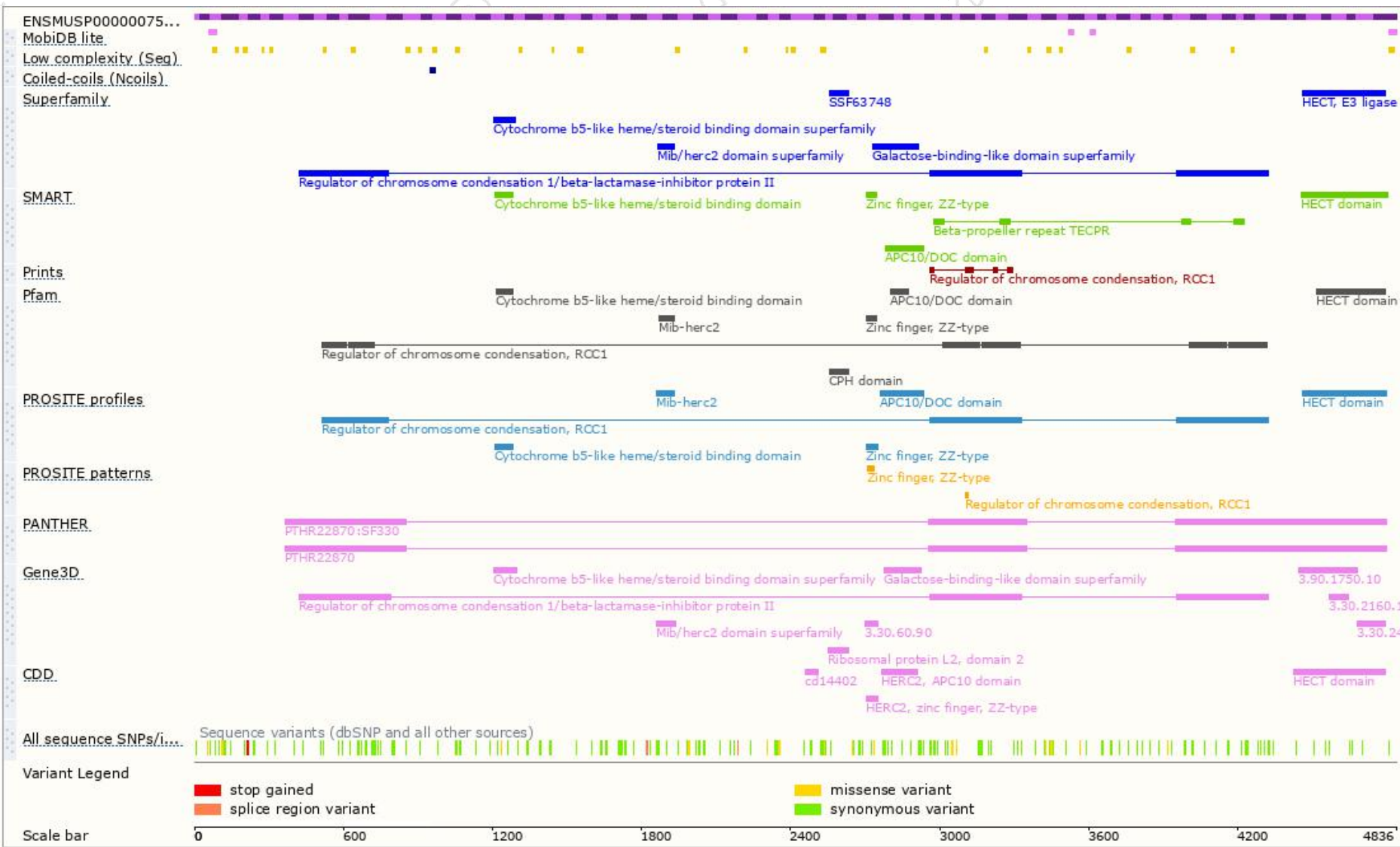
The strategy is based on the design of *Herc2-201* transcript,The transcription is shown below



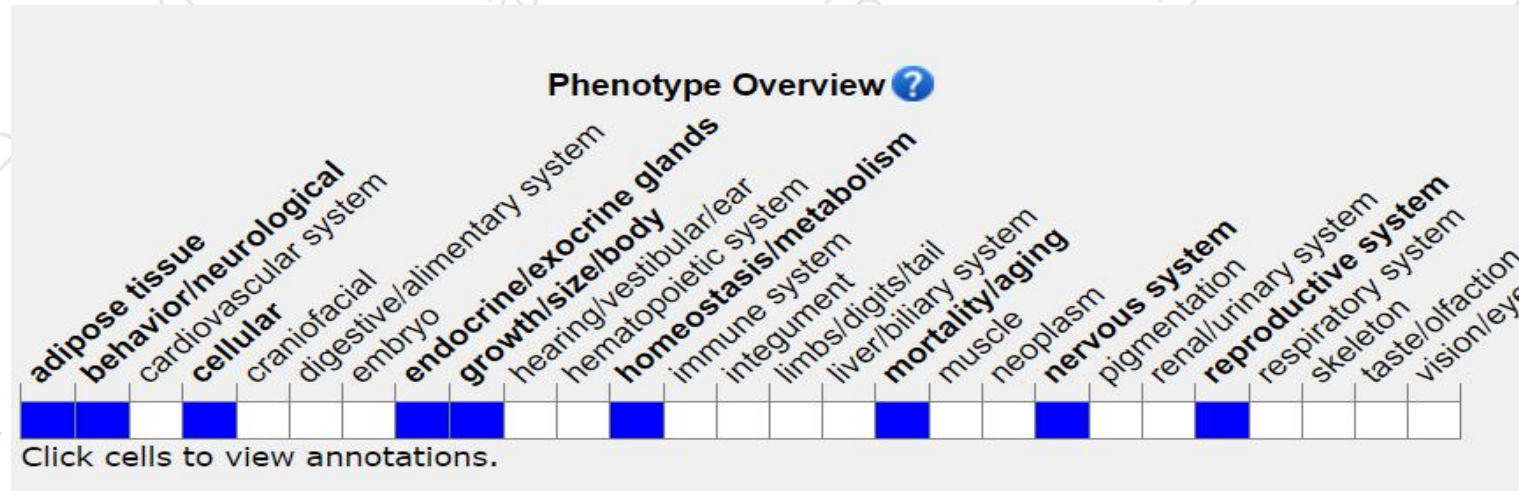
Genomic location distribution



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/>).

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

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