

Herc1 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2018-5-30

Project Overview

Project Name

Herc1

Project type

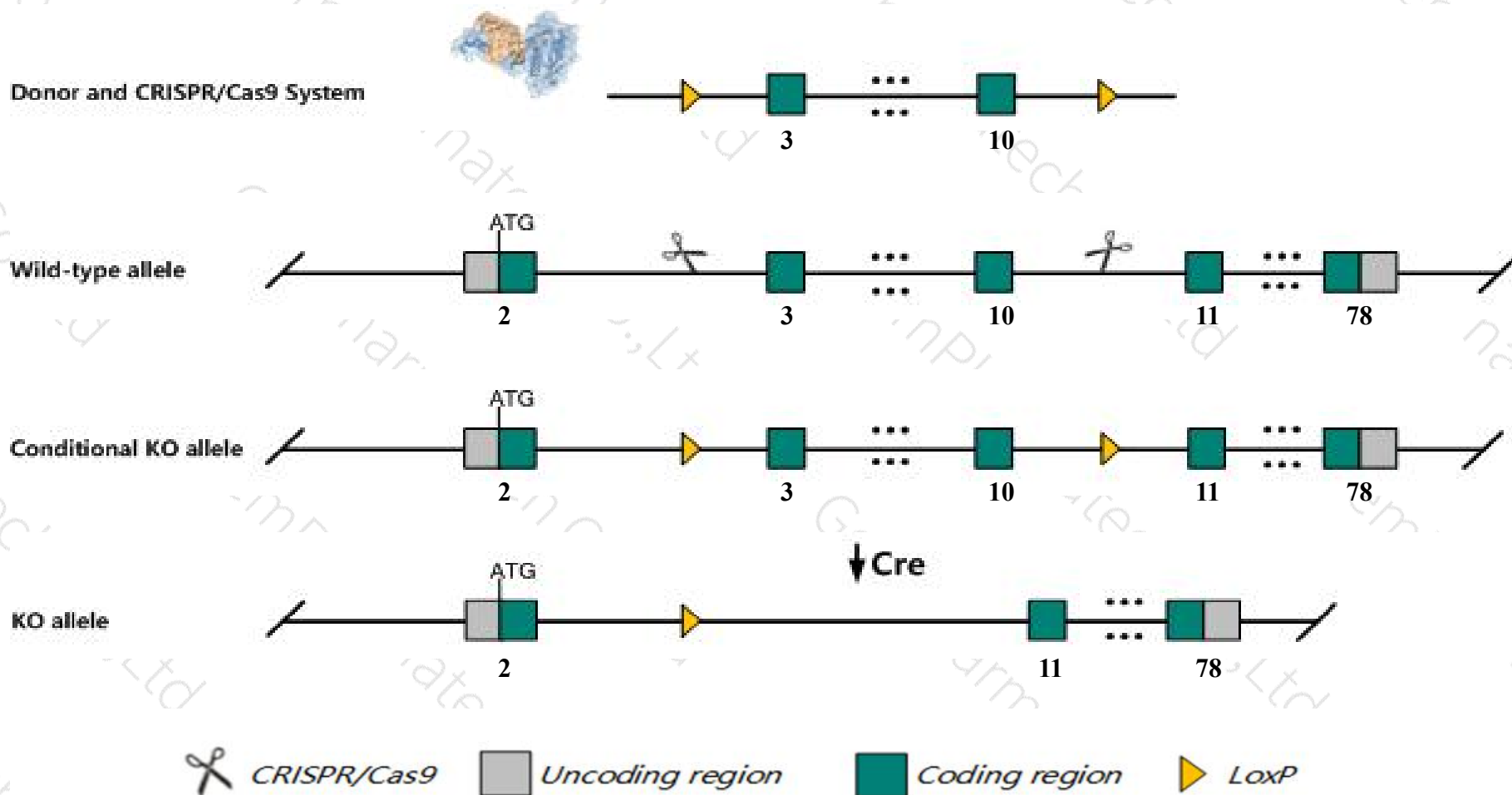
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Herc1* gene. The schematic diagram is as follows:



Technical routes

- The *Herc1* gene has 7 transcripts. According to the structure of *Herc1* gene, exon3-exon10 of *Herc1-201* (ENSMUST00000042824.12) transcript is recommended as the knockout region. The region contains 1289bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Herc1* gene. The brief process is as follows: CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt 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/6JGpt mice.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, Homozygotes for this spontaneous mutation exhibit an abnormal cerebellar Purkinje cell layer and Purkinje cell degeneration.
- Transcript *Herc1*-202/203/204/205/206/207 may not be affected.
- The *Herc1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Herc1 HECT and RLD domain containing E3 ubiquitin protein ligase family member 1 [*Mus musculus* (house mouse)]

Gene ID: 235439, updated on 12-Aug-2019

Summary



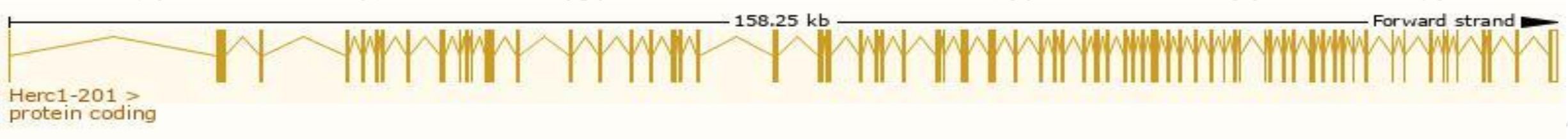
Official Symbol	Herc1 provided by MGI
Official Full Name	HECT and RLD domain containing E3 ubiquitin protein ligase family member 1 provided by MGI
Primary source	MGI:MGI:2384589
See related	Ensembl:ENSMUSG00000038664
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	tbl; B230218H07; 2810449H11Rik; D130015N03Rik
Expression	Ubiquitous expression in CNS E18 (RPKM 13.0), CNS E14 (RPKM 11.8) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

The gene has 7 transcripts,all transcripts are shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Translation ID ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Herc1-201	ENSMUST00000042824.12	15153	4859aa	ENSMUSP00000044801.6	Protein coding	CCDS52840	E9PZP8	TSL:5 Gencode basic APPRIS P1
Herc1-202	ENSMUST00000124969.1	3032	No protein	-	Retained intron	-	-	TSL:1
Herc1-203	ENSMUST00000130854.1	4334	No protein	-	Retained intron	-	-	TSL:1
Herc1-204	ENSMUST00000135159.1	1705	569aa	ENSMUSP00000119991.1	Protein coding	-	F6RXM1	CDS 5' and 3' incomplete TSL:1
Herc1-205	ENSMUST00000135600.1	3041	No protein	-	Retained intron	-	-	TSL:1
Herc1-206	ENSMUST00000140487.1	4781	No protein	-	Retained intron	-	-	TSL:1
Herc1-207	ENSMUST00000144280.1	2457	No protein	-	Retained intron	-	-	TSL:1

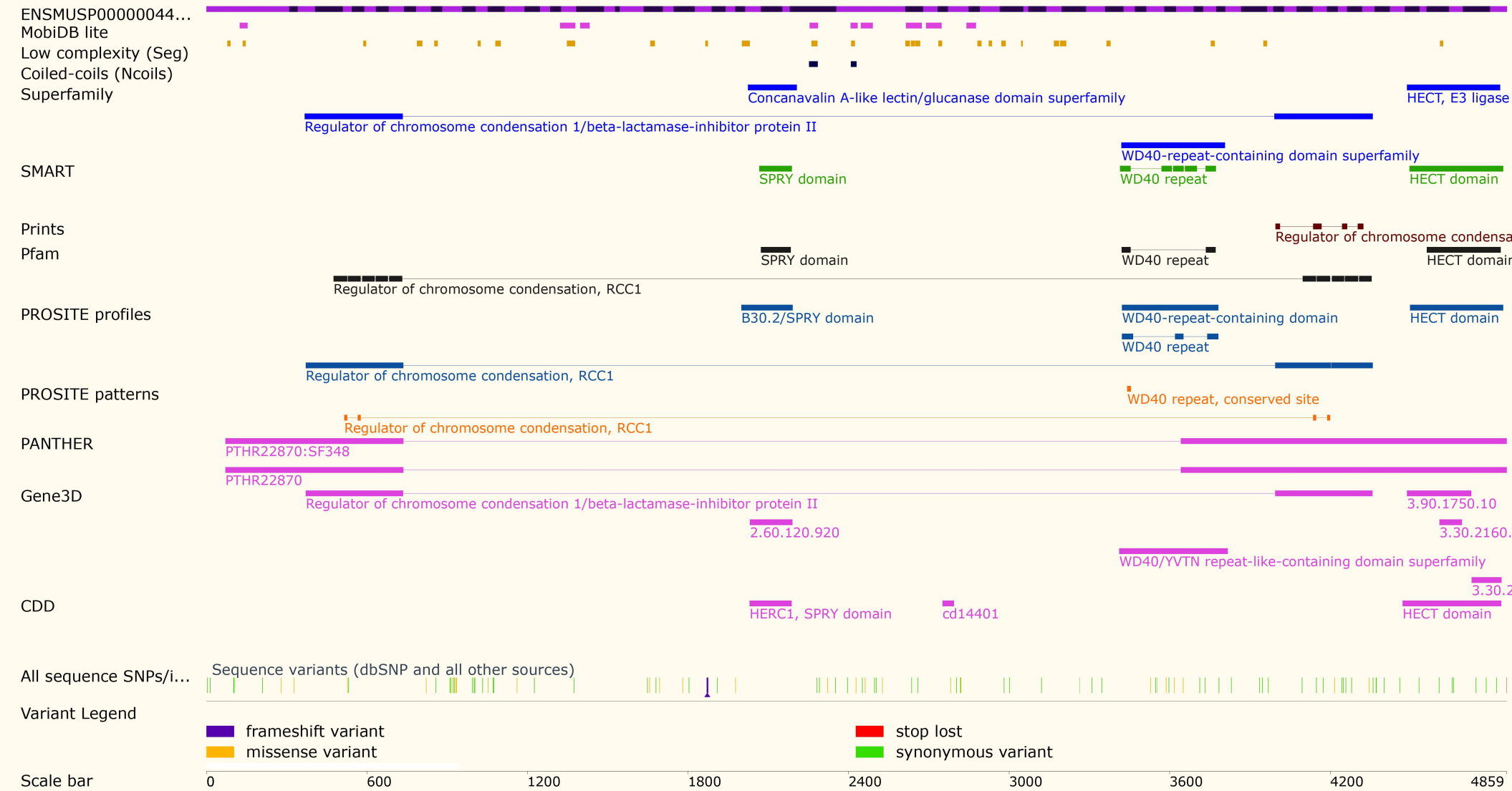
The strategy is based on the design of *Herc1-201* transcript,The transcription is shown below



Genomic location distribution

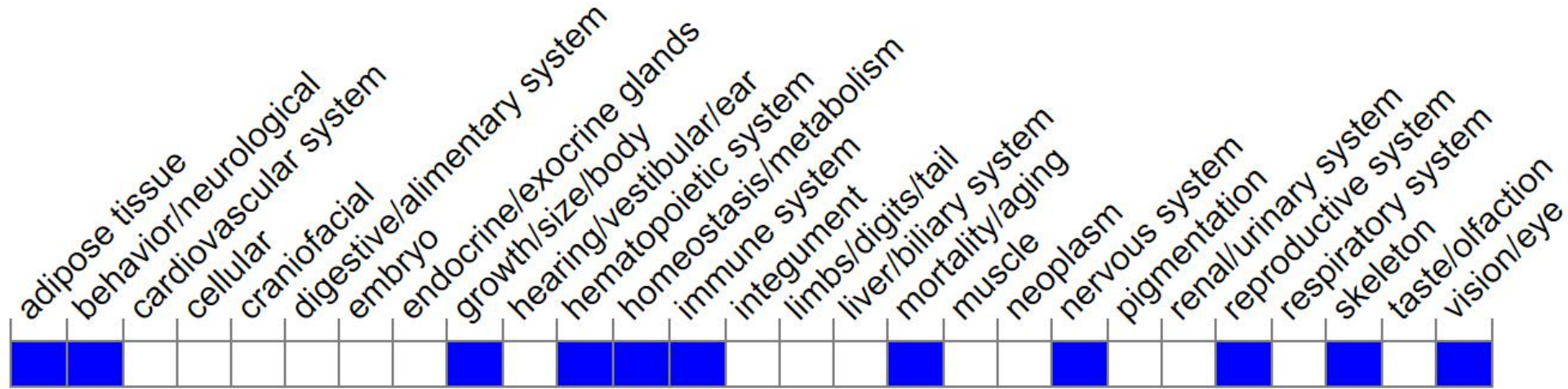


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



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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