Edn1 Cas9-KO Strategy

Designer: Jinling Wang

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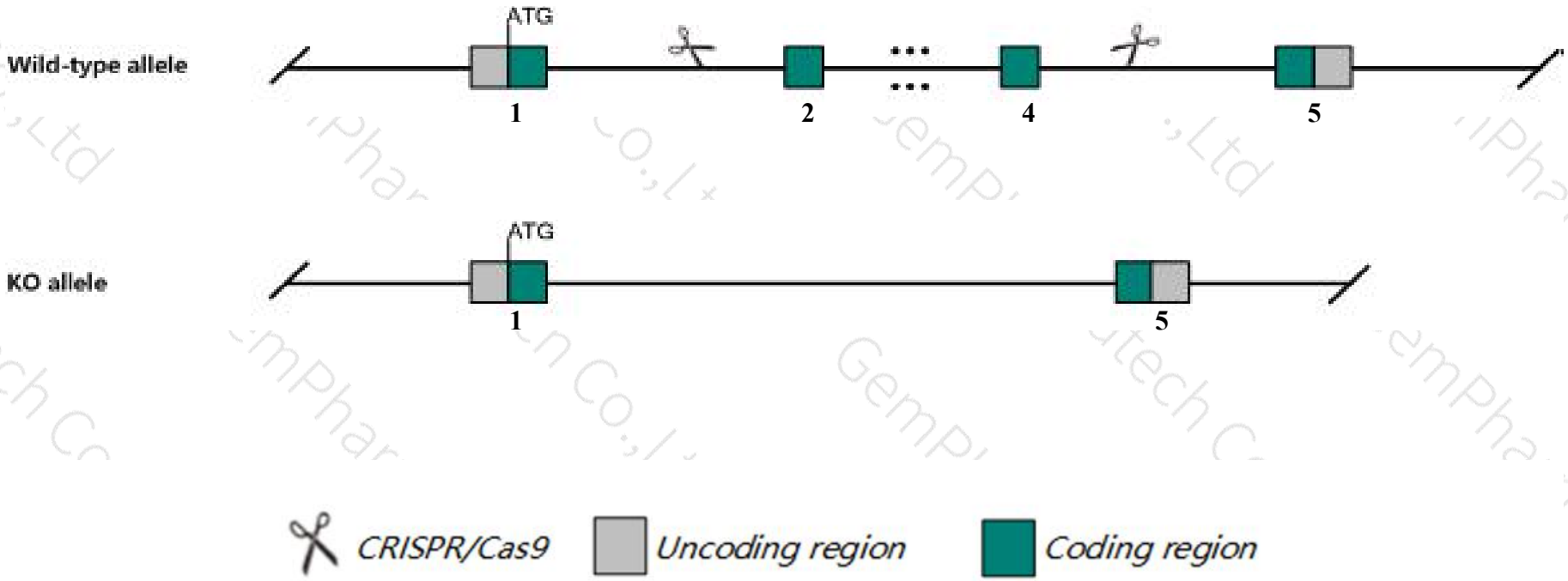
Project Overview

Project Name	***Edn1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Edn1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Edn1* gene has 1 transcript. According to the structure of *Edn1* gene, exon2-exon4 of *Edn1-201* (ENSMUST00000021796.8) transcript is recommended as the knockout region.The region contains 442bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Edn1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygotes for a targeted null mutation exhibit cardiovascular malformations, craniofacial abnormalities, and lethality due to respiratory failure at birth. Heterozygotes develop elevated arterial blood pressure.

- The *Edn1* gene is located on the Chr13. 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）

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Edn1 endothelin 1 [Mus musculus (house mouse)]

Gene ID: 13614, updated on 25-Mar-2019

Summary

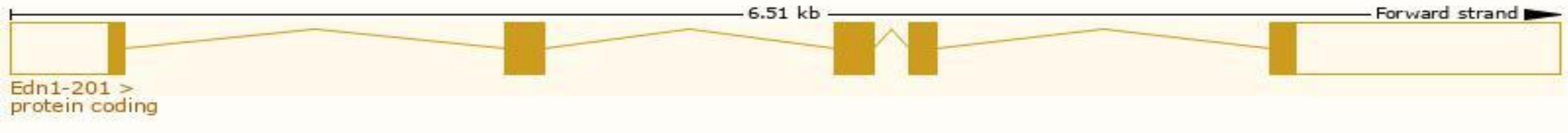
Official Symbol	Edn1 provided by MGI
Official Full Name	endothelin 1 provided by MGI
Primary source	MGI:MGI:95283
See related	Ensembl:ENSMUSG00000021367
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ET-1, PPET1, preproET
Summary	This gene encodes a member of the endothelin family of peptides. The encoded preproprotein undergoes proteolytic processing to generate a peptide before secretion by the vascular endothelial cells. The mature peptide has various biological activities such as vasoconstriction, cell proliferation, stimulation of hormone release and modulation of central nervous activity. Mice lacking the encoded protein exhibit neonatal lethality accompanied with numerous craniofacial and cardiovascular defects due to disruption in cranial and cardiac neural crest cell patterning during early embryogenesis. [provided by RefSeq, Feb 2016]
Expression	Broad expression in lung adult (RPKM 5.9), colon adult (RPKM 3.5) and 20 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

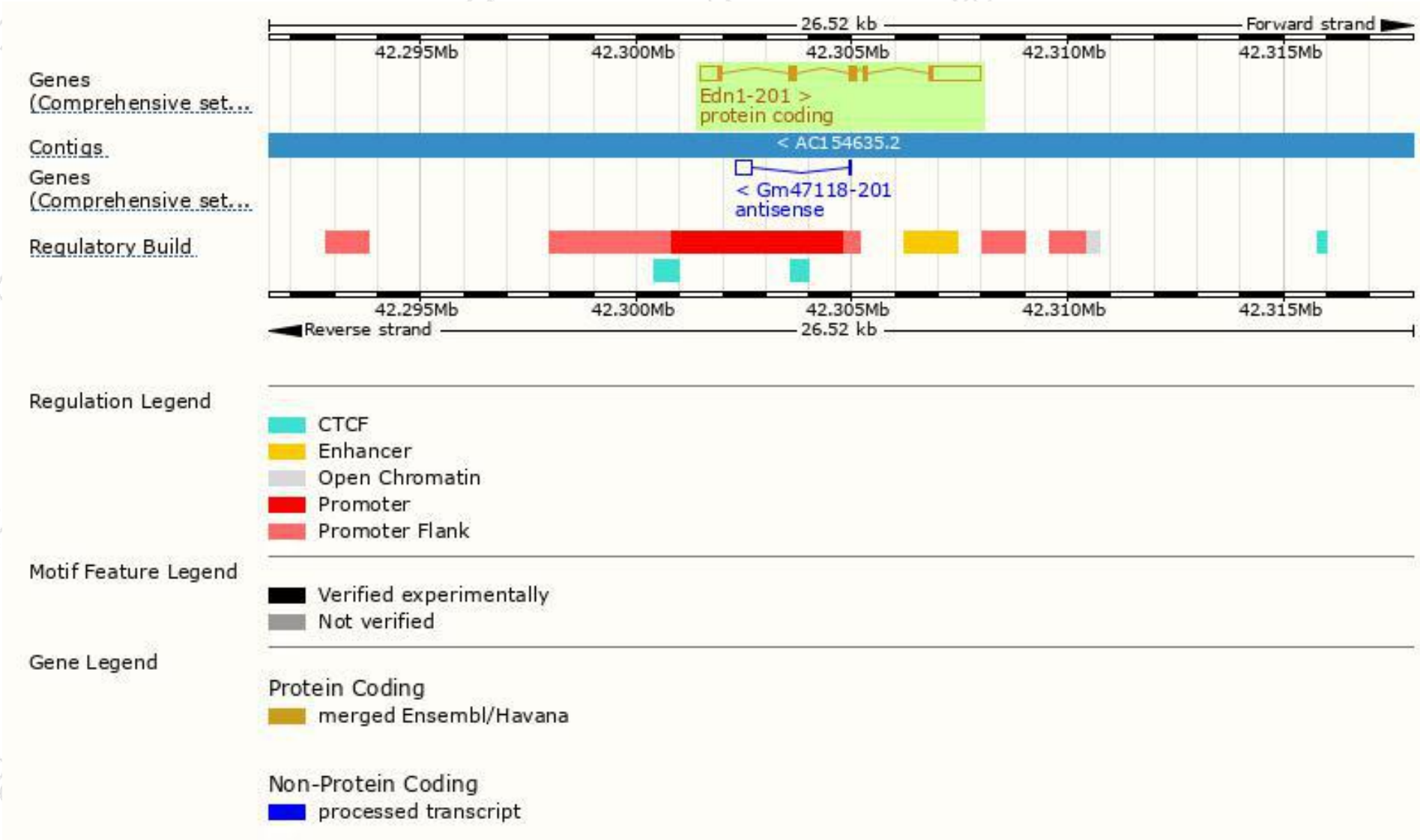
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Edn1-201	ENSMUST00000021796.8	2139	202aa	Protein coding	CCDS26474	P22387 Q544E0	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Edn1-201* 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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集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd