

Itih2 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2020-01-31

Project Overview

Project Name

Itih2

Project type

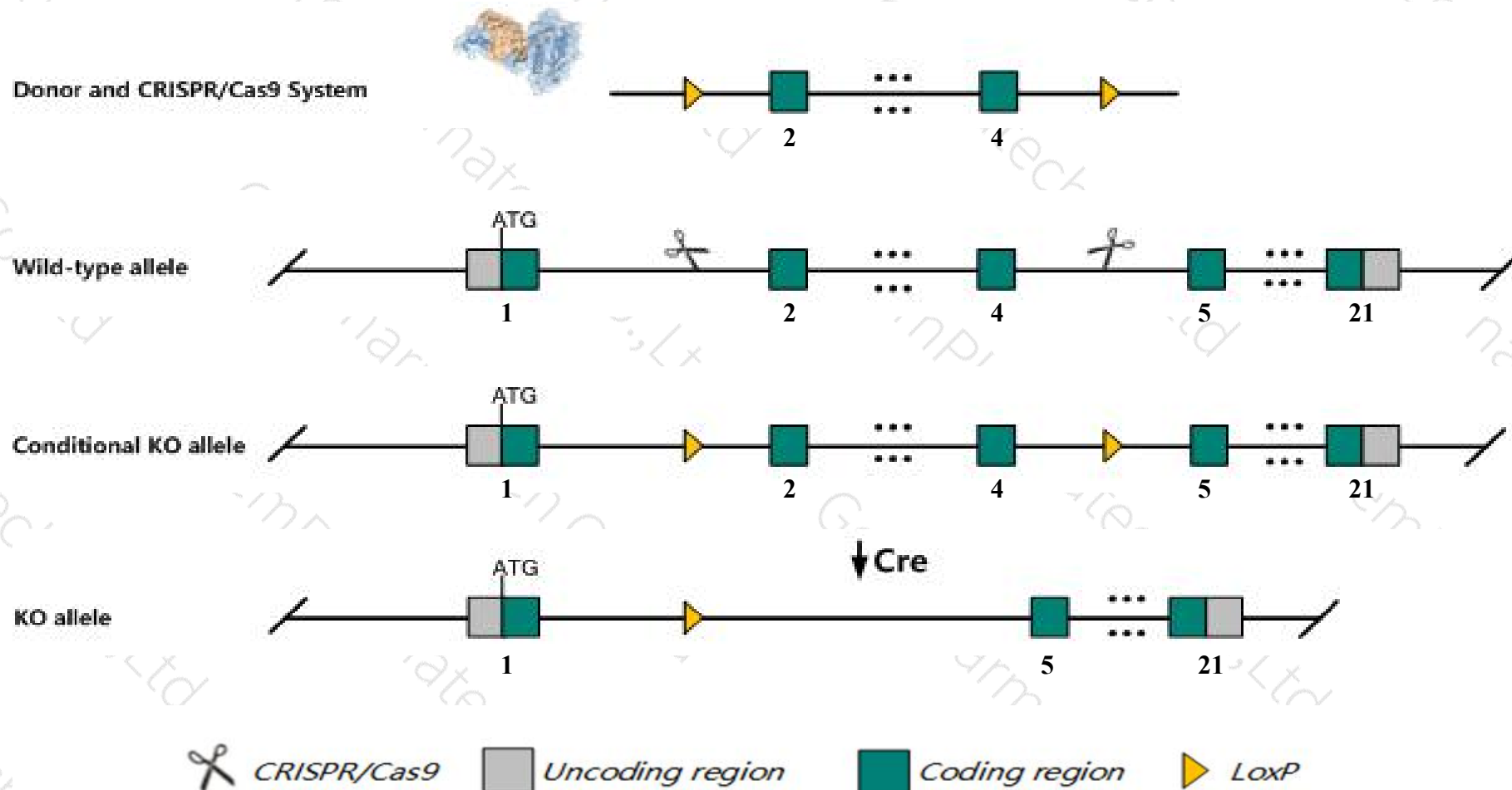
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Itih2* gene. The schematic diagram is as follows:



Technical routes

- The *Itih2* gene has 3 transcripts. According to the structure of *Itih2* gene, exon2-exon4 of *Itih2-201* (ENSMUST00000042290.13) transcript is recommended as the knockout region. The region contains 278bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Itih2* 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.

- The effect of transcript 203 is unknown.
- The *Itih2* gene is located on the Chr2. 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)

Itih2 inter-alpha trypsin inhibitor, heavy chain 2 [*Mus musculus* (house mouse)]

Gene ID: 16425, updated on 12-Aug-2019

Summary

Official Symbol	Itih2 provided by MGI
Official Full Name	inter-alpha trypsin inhibitor, heavy chain 2 provided by MGI
Primary source	MGI:MGI:96619
See related	Ensembl:ENSMUSG00000037254
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	Intin2; Itih-2; AI747202
Expression	Biased expression in liver E18 (RPKM 372.8), liver E14 (RPKM 211.7) and 3 other tissues See more
Orthologs	human all

Genomic context

Location: 2 A1; 2 6.89 cM

See Itih2 in [Genome Data Viewer](#)

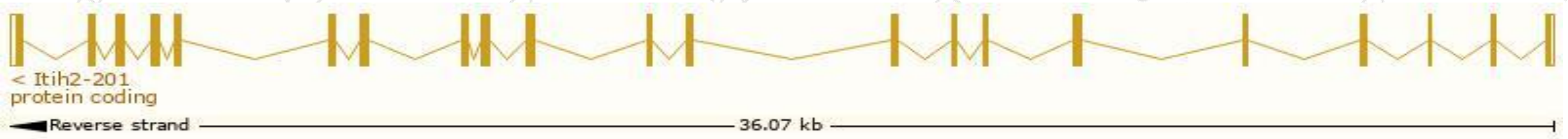
Exon count: 21

Transcript information (Ensembl)

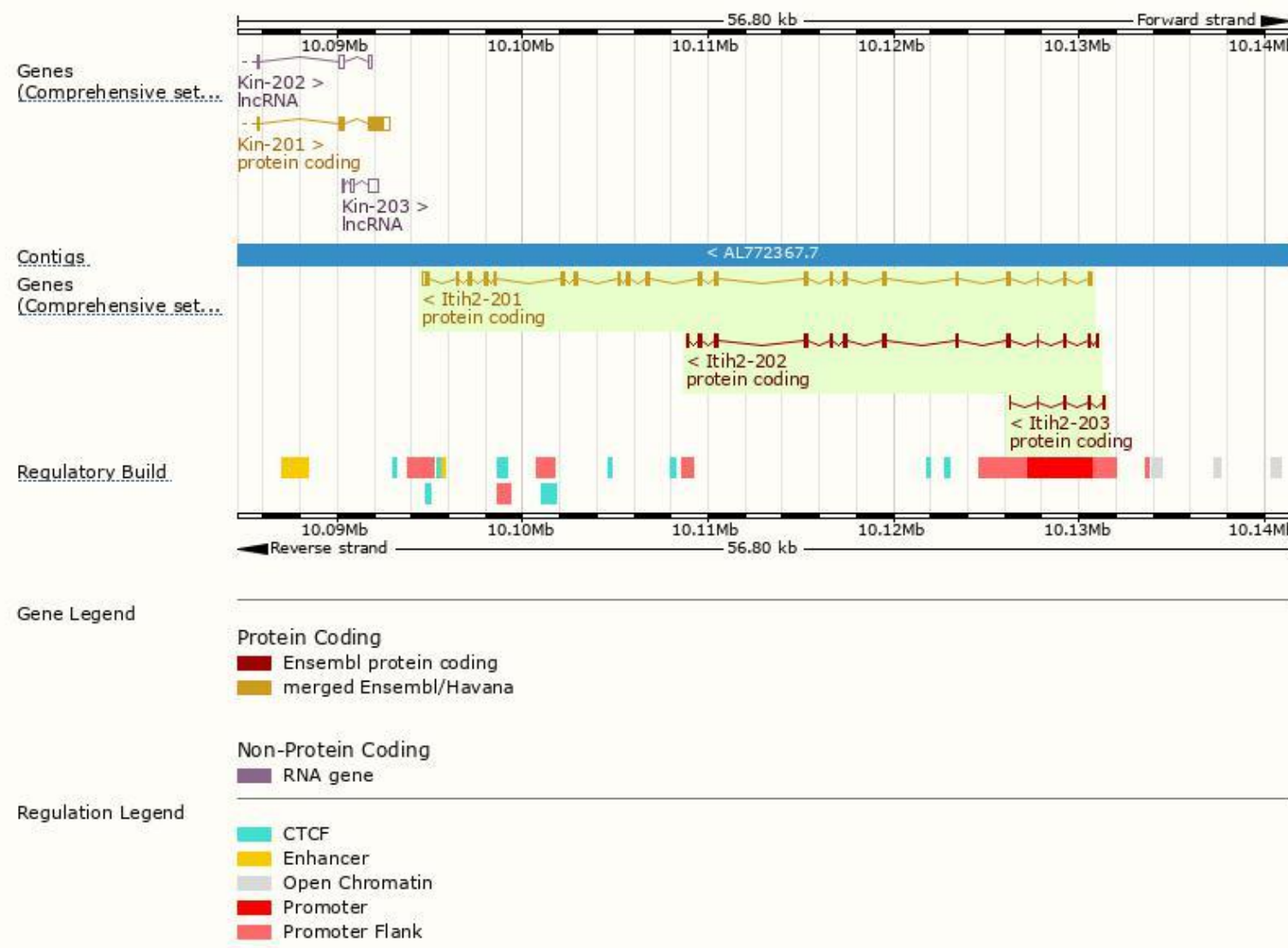
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Itih2-201	ENSMUST00000042290.13	3100	950aa	Protein coding	CCDS15677	G3X977	TSL:1 GENCODE basic APPRIS P1
Itih2-202	ENSMUST00000155809.8	1507	452aa	Protein coding	-	Q3UEG7	CDS 3' incomplete TSL:1
Itih2-203	ENSMUST00000161909.1	391	81aa	Protein coding	-	E0CX69	CDS 3' incomplete TSL:3

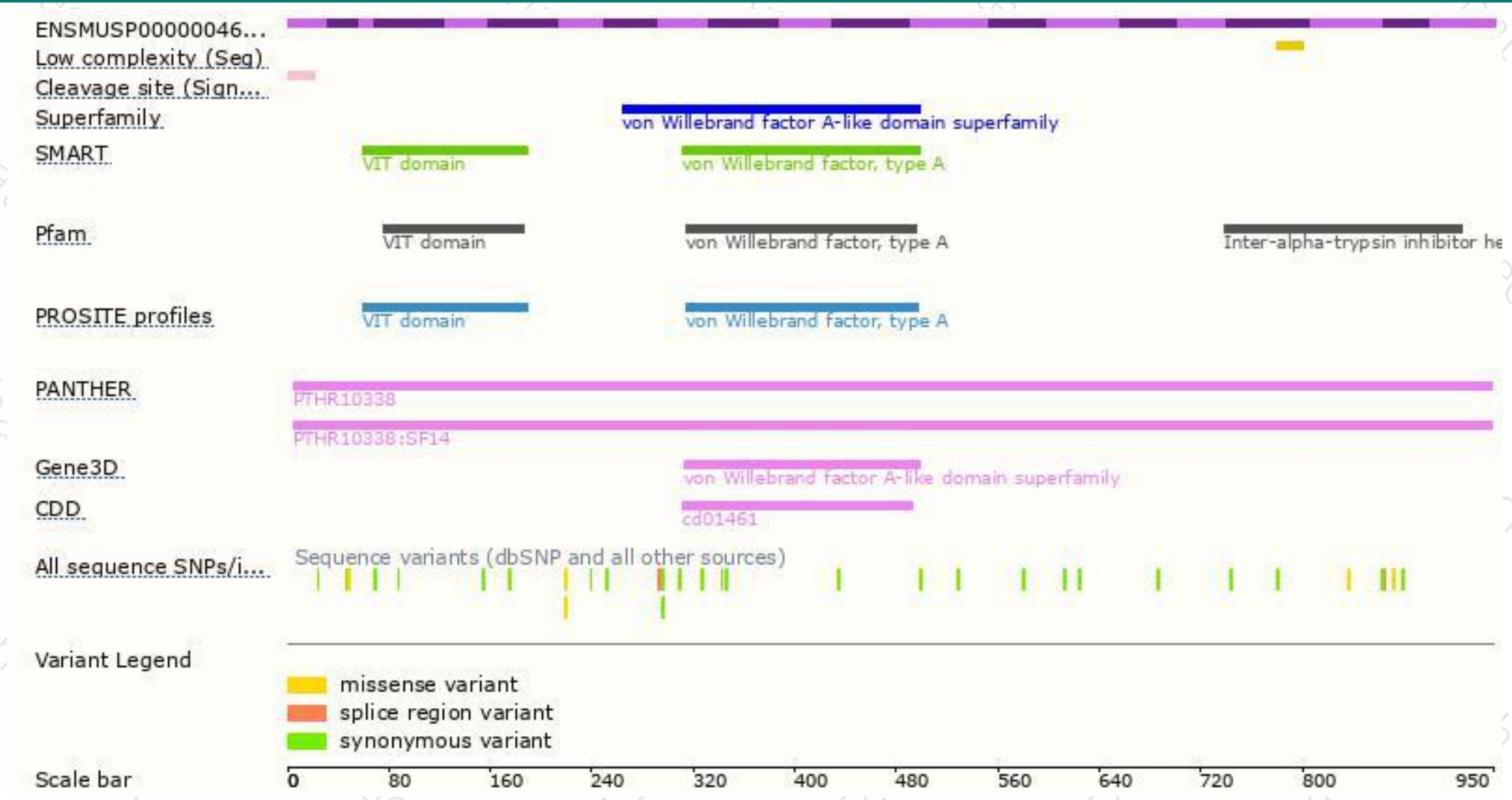
The strategy is based on the design of *Itih2-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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