

Tacc2 Cas9-CKO Strategy

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Project Overview

Project Name

Tacc2

Project type

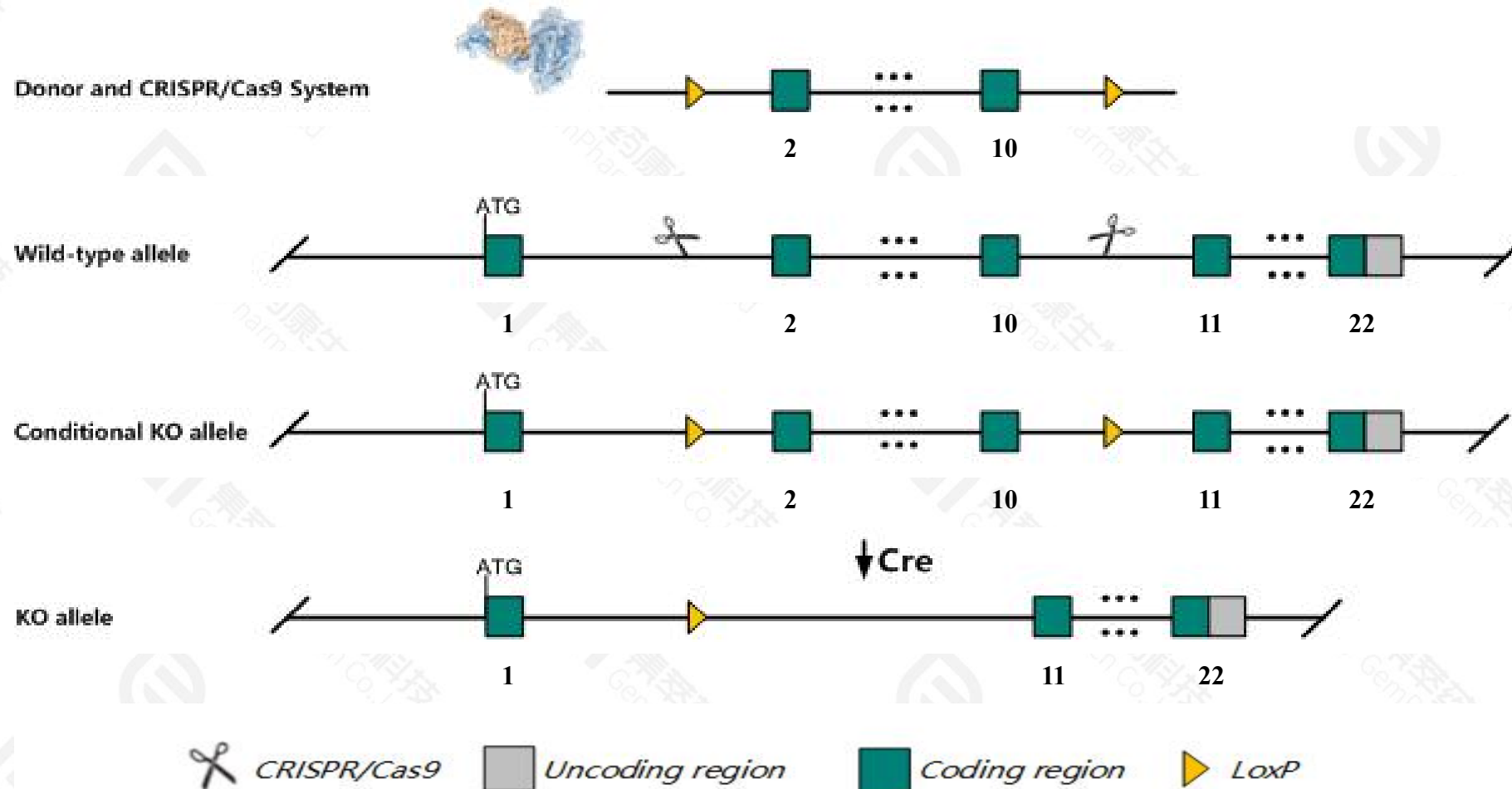
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tacc2* gene. The schematic diagram is as follows:



- The *Tacc2* gene has 19 transcripts. According to the structure of *Tacc2* gene, exon2-exon10 of *Tacc2*-203(ENSMUST00000084513.12) transcript is recommended as the knockout region. The region contains 7306bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tacc2* 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, homozygous null mice are healthy and fertile and do not display any increase in tumorigenesis.
- The partial intron of *Fgfr2* gene will be deleted together in this strategy, The effect on transcript *Fgfr2* is unknown.
- The *Tacc2* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Tacc2 transforming, acidic coiled-coil containing protein 2 [Mus musculus (house mouse)]

Gene ID: 57752, updated on 17-Feb-2021

Summary



Official Symbol Tacc2 provided by [MGI](#)

Official Full Name transforming, acidic coiled-coil containing protein 2 provided by [MGI](#)

Primary source [MGI:MGI:1928899](#)

See related [Ensembl:ENSMUSG00000030852](#)

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 mKIAA4180

Summary This gene encodes a member of the transforming, acidic coiled-coil (TACC) family of proteins. Members of this family are centrosomal proteins that interact with microtubules and tubulin. TACC proteins are thought to be involved in centrosome/mitotic spindle dynamics and gene regulation. Alternative splicing of this gene results in multiple transcript variants encoding different isoforms. [provided by RefSeq, Jul 2008]

Expression Ubiquitous expression in heart adult (RPKM 13.1), bladder adult (RPKM 5.9) and 22 other tissues [See more](#)

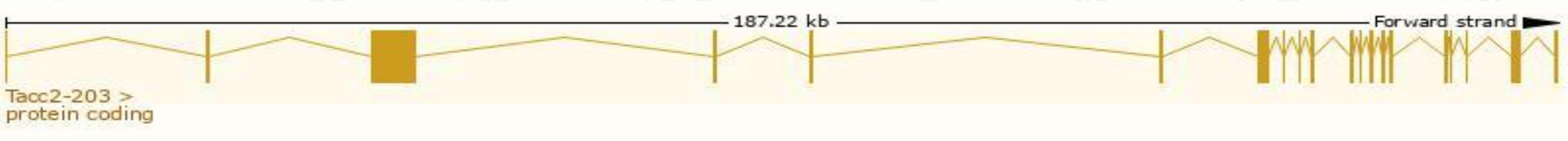
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

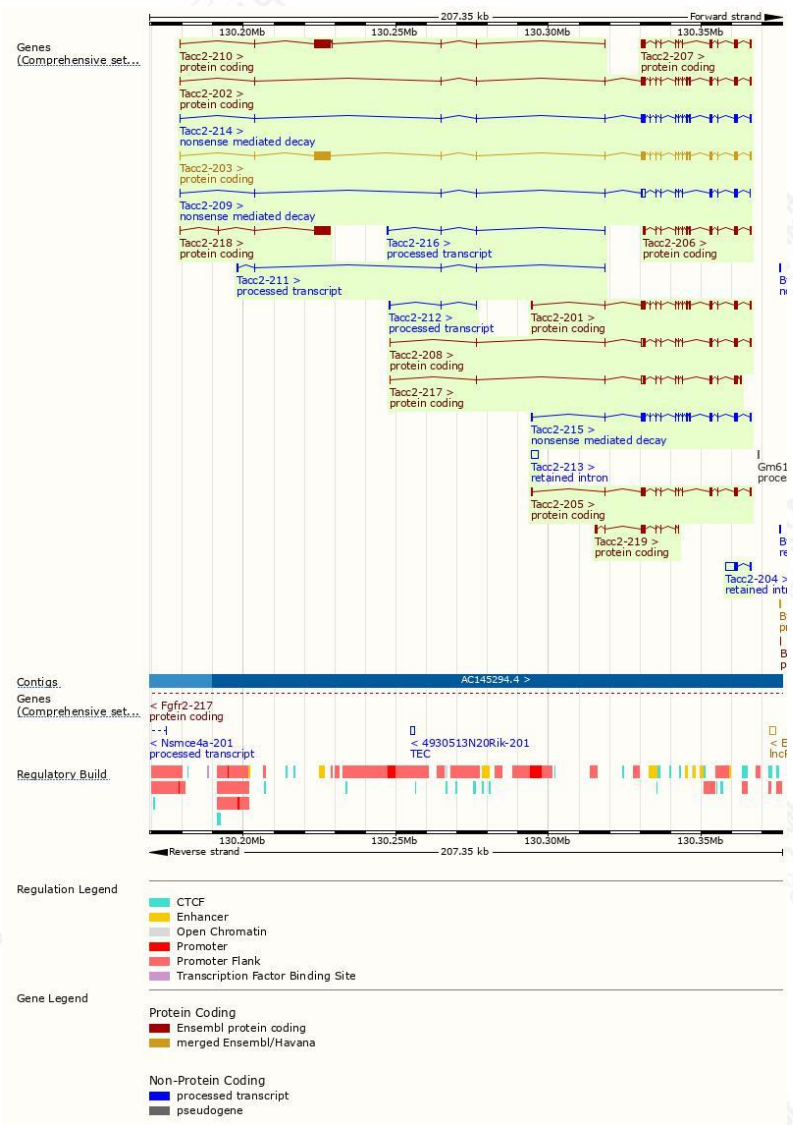
The gene has 19 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|-----------|---------------------------------------|------|------------------------|-------------------------|---------------------------|---------|---------------------------------------|
| Tacc2-203 | ENSMUST00000084513.12 | 9029 | 2879aa | Protein coding | CCDS21903 | | TSL:5 , GENCODE basic , APPRIS P4 , |
| Tacc2-201 | ENSMUST00000033141.7 | 3940 | 1036aa | Protein coding | CCDS21905 | | TSL:5 , GENCODE basic , APPRIS ALT2 , |
| Tacc2-202 | ENSMUST00000059145.14 | 3906 | 1146aa | Protein coding | CCDS21904 | | TSL:5 , GENCODE basic , APPRIS ALT2 , |
| Tacc2-205 | ENSMUST00000207282.2 | 3464 | 947aa | Protein coding | CCDS85432 | | TSL:1 , GENCODE basic , APPRIS ALT2 , |
| Tacc2-210 | ENSMUST00000207918.2 | 5804 | 1919aa | Protein coding | - | | CDS 3' incomplete , TSL:5 , |
| Tacc2-218 | ENSMUST00000215492.2 | 5312 | 1770aa | Protein coding | - | | CDS 3' incomplete , TSL:5 , |
| Tacc2-208 | ENSMUST00000207549.2 | 3492 | 568aa | Protein coding | - | | TSL:1 , GENCODE basic , APPRIS ALT2 , |
| Tacc2-217 | ENSMUST00000209108.2 | 3310 | 555aa | Protein coding | - | | TSL:1 , GENCODE basic , |
| Tacc2-207 | ENSMUST00000207395.2 | 2934 | 829aa | Protein coding | - | | CDS 5' incomplete , TSL:1 , |
| Tacc2-206 | ENSMUST00000207376.2 | 2557 | 696aa | Protein coding | - | | CDS 5' incomplete , TSL:5 , |
| Tacc2-219 | ENSMUST00000239258.2 | 2268 | 669aa | Protein coding | - | | CDS 3' incomplete , |
| Tacc2-214 | ENSMUST00000208722.2 | 3883 | 1020aa | Nonsense mediated decay | - | | TSL:5 , |
| Tacc2-215 | ENSMUST00000208743.2 | 3878 | 910aa | Nonsense mediated decay | - | | TSL:1 , |
| Tacc2-209 | ENSMUST00000207789.2 | 3146 | 255aa | Nonsense mediated decay | - | | TSL:5 , |
| Tacc2-212 | ENSMUST00000208106.2 | 766 | No protein | Processed transcript | - | | TSL:1 , |
| Tacc2-211 | ENSMUST00000207999.2 | 604 | No protein | Processed transcript | - | | TSL:5 , |
| Tacc2-216 | ENSMUST00000208882.2 | 419 | No protein | Processed transcript | - | | TSL:3 , |
| Tacc2-204 | ENSMUST00000207230.2 | 3668 | No protein | Retained intron | - | | TSL:1 , |
| Tacc2-213 | ENSMUST00000208661.2 | 2248 | No protein | Retained intron | - | | TSL:NA , |

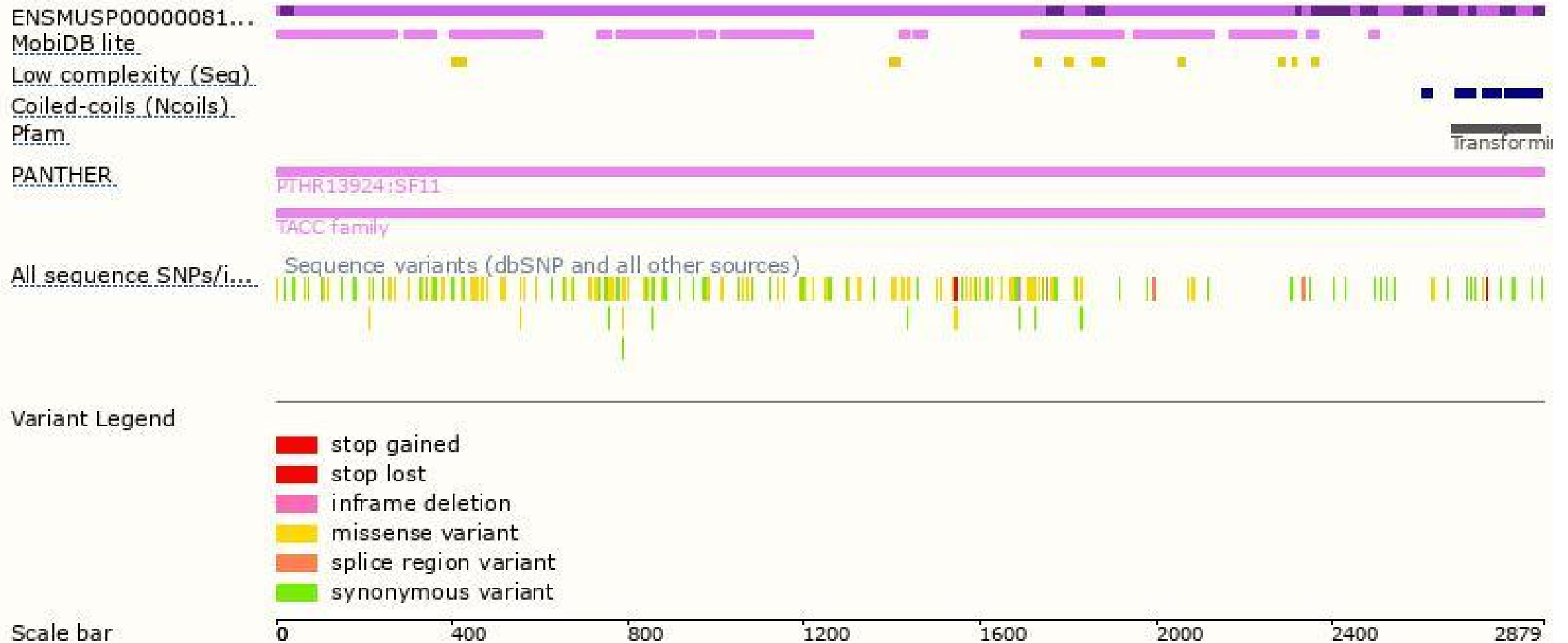
The strategy is based on the design of *Tacc2-203* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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