Tnk2 Cas9-CKO Strategy

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Project Overview

Project Name	*Tnk2*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tnk2* gene. The schematic diagram is as follows:
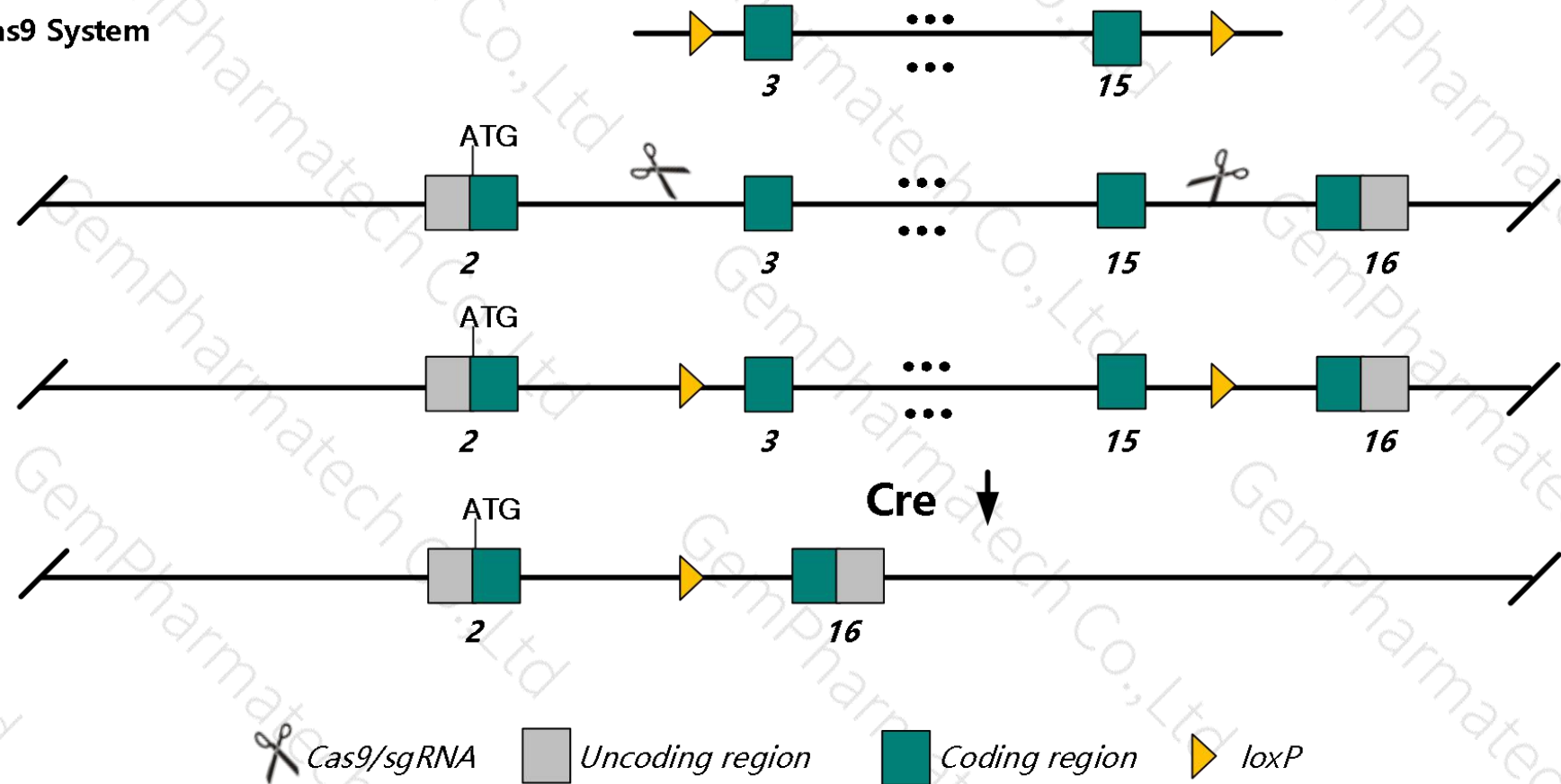
Technical routes

➤ The *Tnk2* gene has 24 transcripts. According to the structure of *Tnk2* gene, exon3-exon15 of *Tnk2-205* (ENSMUST00000115124.8) transcript is recommended as the knockout region.The region contains Ens 2998bp coding sequence. Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Tnk2* 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.

Notice

➢ The flox region contain the Tnk2os gene, which may delet it after Cre.

➢ Transcript 208 CDS 5' incomplete the influences is unknown.

➢ The *Tnk2* gene is located on the Chr16. 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）

Tnk2   tyrosine kinase, non-receptor, 2 [*Mus musculus* (house mouse)]

Gene ID: 51789, updated on 13-Mar-2020

▲ Summary

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Official Symbol	Tnk2 provided by MGI
Official Full Name	tyrosine kinase, non-receptor, 2 provided by MGI
Primary source	MGI:MGI:1858308
See related	Ensembl:ENSMUSG00000022791
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	Ack; Ack1; Pyk1; Ack-1; Cdgip
Expression	Ubiquitous expression in thymus adult (RPKM 54.9), stomach adult (RPKM 35.9) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

The gene has 24 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tnk2-205	ENSMUST00000115124.8	4516	1055aa	Protein coding	CCDS37313	G3X9X7	TSL:1 GENCODE basic
Tnk2-206	ENSMUST00000115125.7	4313	1008aa	Protein coding	CCDS49828	A0A0R4J1L0	TSL:1 GENCODE basic
Tnk2-201	ENSMUST00000115120.8	2796	550aa	Protein coding	CCDS84224	D3Z3U7	TSL:1 GENCODE basic
Tnk2-207	ENSMUST00000115126.8	4540	1038aa	Protein coding	-	D3Z3U5	TSL:5 GENCODE basic APPRIS ALT1
Tnk2-221	ENSMUST00000238856.1	4267	1072aa	Protein coding	-	-	GENCODE basic APPRIS P5
Tnk2-204	ENSMUST00000115123.8	4226	1040aa	Protein coding	-	D3Z3U6	TSL:5 GENCODE basic APPRIS ALT1
Tnk2-219	ENSMUST00000238806.1	4189	1040aa	Protein coding	-	-	GENCODE basic APPRIS ALT1
Tnk2-222	ENSMUST00000238891.1	4049	1047aa	Protein coding	-	-	GENCODE basic
Tnk2-202	ENSMUST00000115121.8	1096	264aa	Protein coding	-	E9QN61	CDS 3' incomplete TSL:3
Tnk2-213	ENSMUST00000152361.3	939	311aa	Protein coding	-	E9Q5M1	CDS 3' incomplete TSL:5
Tnk2-214	ENSMUST00000156614.2	871	290aa	Protein coding	-	A0A494BAM7	CDS 5' and 3' incomplete TSL:2
Tnk2-209	ENSMUST00000131238.7	742	98aa	Protein coding	-	E9PWA3	CDS 3' incomplete TSL:5
Tnk2-208	ENSMUST00000124585.1	471	44aa	Protein coding	-	A0A1Y7VLM9	CDS 3' incomplete TSL:3
Tnk2-212	ENSMUST00000150383.7	408	95aa	Protein coding	-	-	CDS 3' incomplete TSL:3
Tnk2-211	ENSMUST00000145627.7	380	97aa	Protein coding	-	A0A1Y7VJA6	CDS 3' incomplete TSL:3
Tnk2-203	ENSMUST00000115122.8	227	27aa	Protein coding	-	E9QN60	CDS 3' incomplete TSL:5
Tnk2-220	ENSMUST00000238815.1	1732	64aa	Nonsense mediated decay	-	-	CDS 5' incomplete
Tnk2-210	ENSMUST00000137044.2	1075	211aa	Nonsense mediated decay	-	-	CDS 5' incomplete TSL:5
Tnk2-218	ENSMUST00000238799.1	711	52aa	Nonsense mediated decay	-	-	CDS 5' incomplete
Tnk2-224	ENSMUST00000239161.1	491	No protein	Processed transcript	-	-	-
Tnk2-223	ENSMUST00000239117.1	425	No protein	Processed transcript	-	-	-
Tnk2-215	ENSMUST00000164358.2	224	No protein	Processed transcript	-	-	TSL:5
Tnk2-216	ENSMUST00000168506.1	769	No protein	Retained intron	-	-	TSL:3
Tnk2-217	ENSMUST00000232650.1	690	No protein	Retained intron	-	-	-

The strategy is based on the design of *Tnk2-205* transcript,The transcription is shown below

38.91 kb

Forward strand

Tnk2-205 >
protein coding
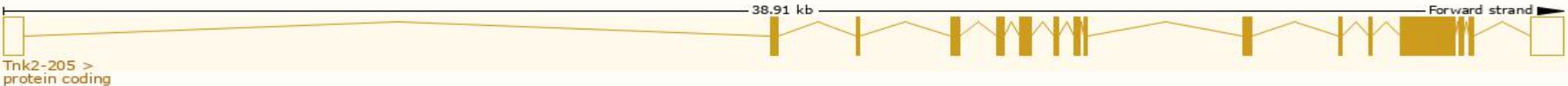
Genomic location distribution
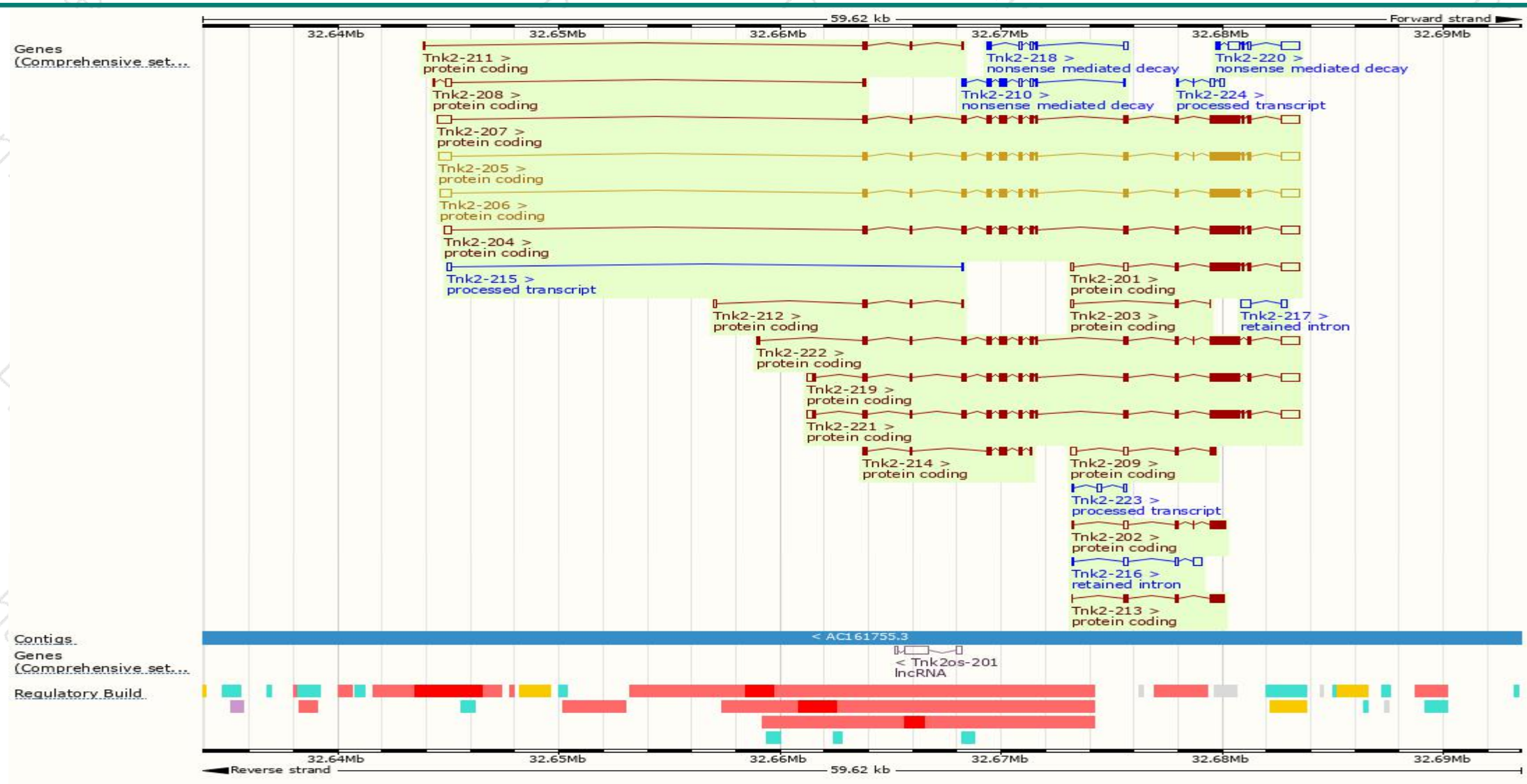
Protein domain

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