Xpo4 Cas9-KO Strategy

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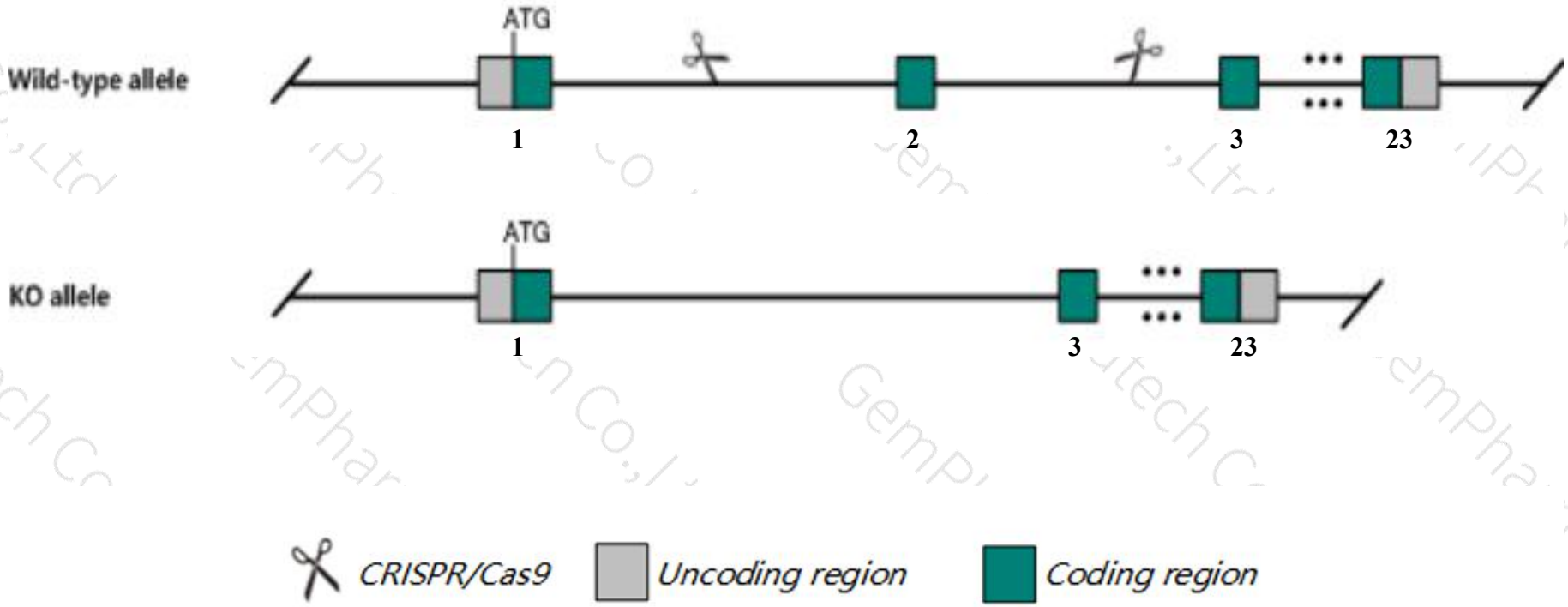
Design Date: 2020-6-19

Project Overview

Project Name	***Xpo4***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Xpo4* gene. The schematic diagram is as follows:



Technical routes

➢ The *Xpo4* gene has 9 transcripts. According to the structure of *Xpo4* gene, exon2 of *Xpo4-209*(ENSMUST00000174545.8) transcript is recommended as the knockout region.The region contains 106bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Xpo4* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ According to the existing MGI data,mice homozygous for a gene trapped allele appear phenotypically normal.

➢ *Gm49361* gene will be deleted.

➢ The *Xpo4* gene is located on the Chr14. 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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Xpo4 exportin 4 [Mus musculus (house mouse)]

Gene ID: 57258, updated on 13-Mar-2020

Summary

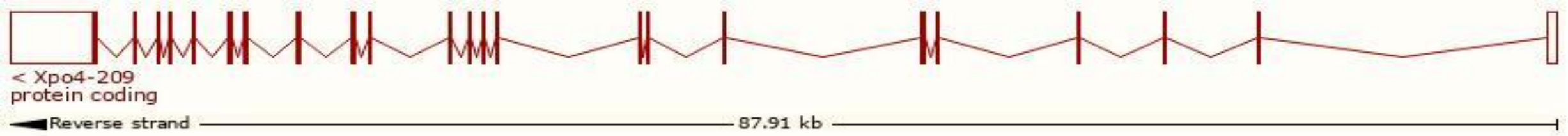
Official Symbol	Xpo4 provided by MGI
Official Full Name	exportin 4 provided by MGI
Primary source	MGI:MGI:1888526
See related	Ensembl:ENSMUSG00000021952
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	B430309A01Rik, mKIAA1721
Expression	Ubiquitous expression in limb E14.5 (RPKM 4.9), CNS E11.5 (RPKM 4.9) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

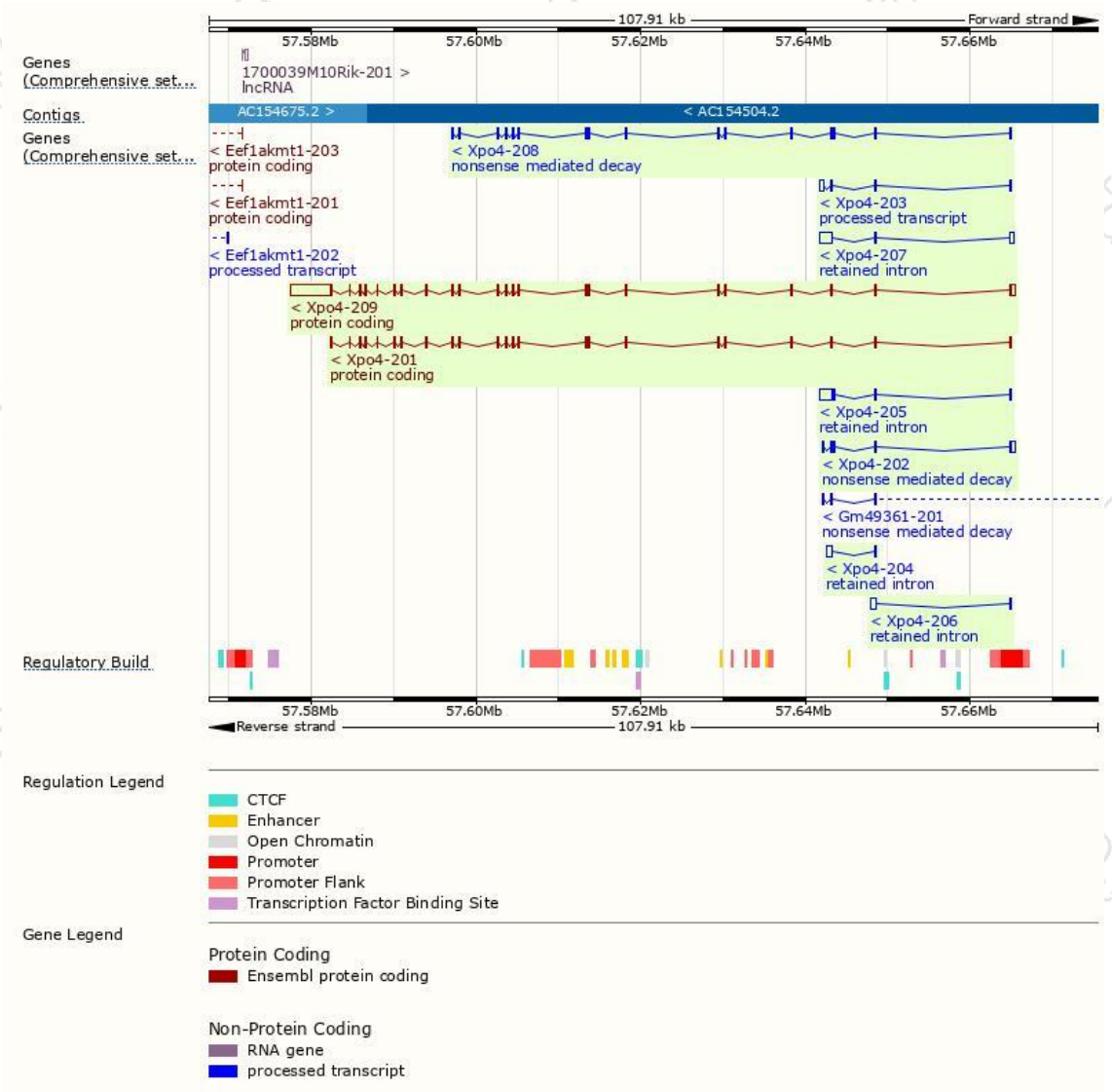
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Xpo4-209	ENSMUST00000174545.8	8680	1151aa	Protein coding	CCDS56961	A0A0R4J254	TSL:1 GENCODE basic APPRIS P2
Xpo4-201	ENSMUST00000089482.11	3456	1151aa	Protein coding	-	Q9ESJ0	TSL:5 GENCODE basic APPRIS ALT1
Xpo4-208	ENSMUST00000174152.7	2323	70aa	Nonsense mediated decay	-	G3UX04	TSL:1
Xpo4-202	ENSMUST00000172524.1	1078	70aa	Nonsense mediated decay	-	G3UX04	TSL:1
Xpo4-203	ENSMUST00000172539.7	707	No protein	Processed transcript	-	-	TSL:2
Xpo4-207	ENSMUST00000173940.7	1893	No protein	Retained intron	-	-	TSL:1
Xpo4-205	ENSMUST00000173172.1	1765	No protein	Retained intron	-	-	TSL:1
Xpo4-204	ENSMUST00000172647.1	947	No protein	Retained intron	-	-	TSL:3
Xpo4-206	ENSMUST00000173638.1	665	No protein	Retained intron	-	-	TSL:2

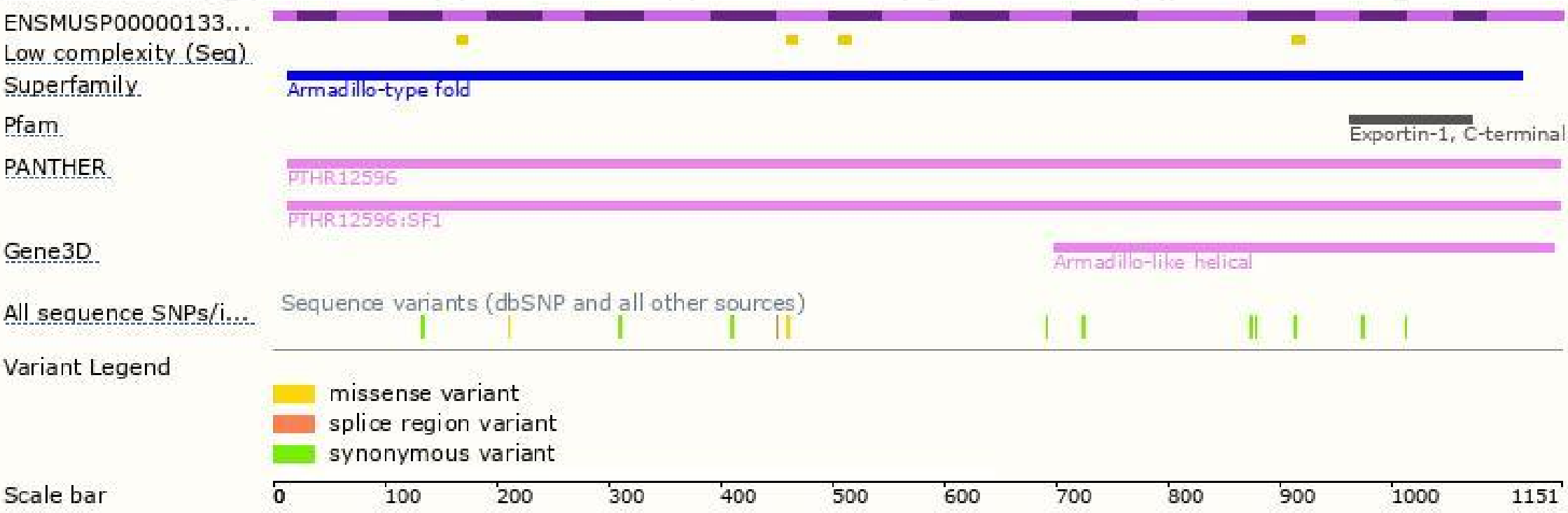
The strategy is based on the design of *Xpo4-209* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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