Ift122 Cas9-KO Strategy

Designer: JiaYu

Reviewer: Xiaojing Li

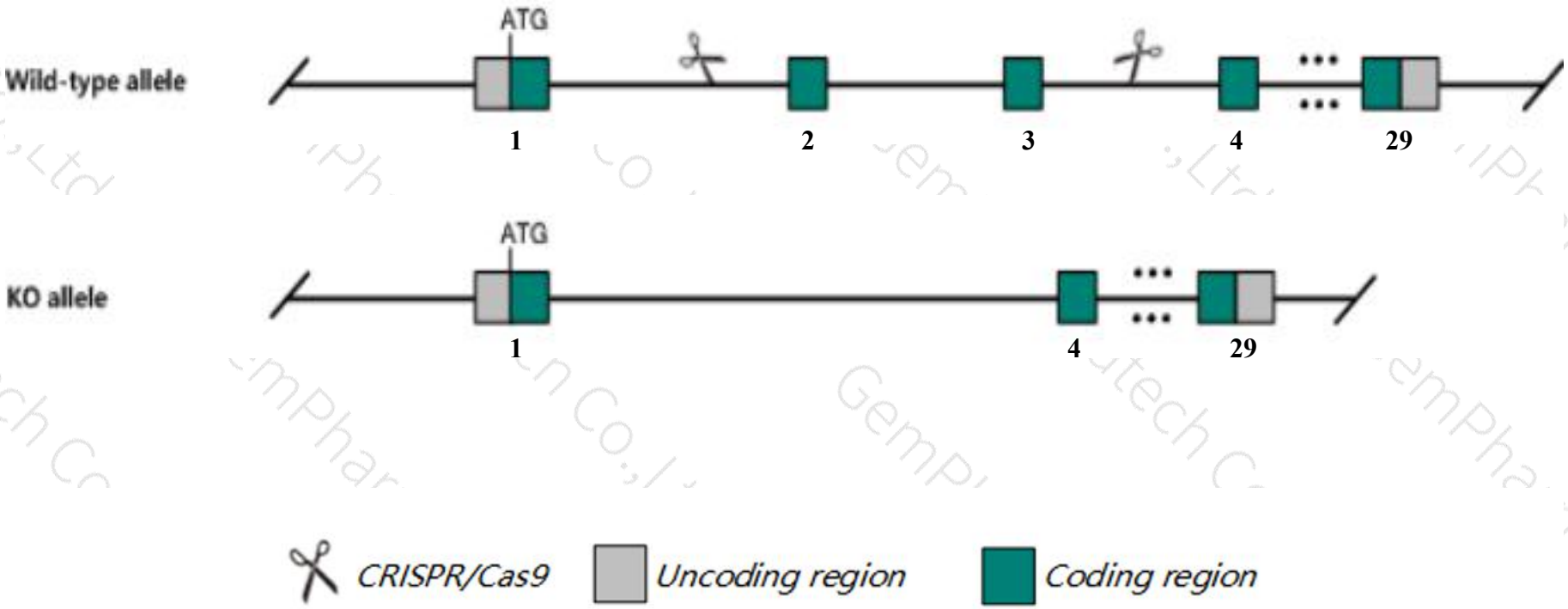
Design Date: 2020-7-29

Project Overview

Project Name	***Ift122***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ift122* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ift122* gene has 12 transcripts. According to the structure of *Ift122* gene, exon2-exon3 of *Ift122-201*(ENSMUST00000038234.12) transcript is recommended as the knockout region.The region contains 152bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ift122* 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,homozygotes for a null mutation display embryonic lethality during organogenesis with exencephaly, a ventralized caudal neural tube, preaxial polydactyly, abnormal cilia, and left-right patterning defects.

➢ The *Ift122* gene is located on the Chr6. 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）

集萃药康 GemPharmatech

Ift122 intraflagellar transport 122 [Mus musculus (house mouse)]

Gene ID: 81896, updated on 13-Mar-2020

Summary

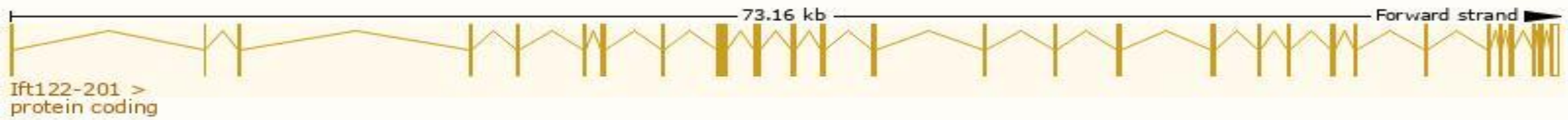
Official Symbol	Ift122 provided by MGI
Official Full Name	intraflagellar transport 122 provided by MGI
Primary source	MGI:MGI:1932386
See related	Ensembl:ENSMUSG00000030323
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C86139, Wdr10, sopb
Expression	Broad expression in testis adult (RPKM 41.9), ovary adult (RPKM 9.3) and 19 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

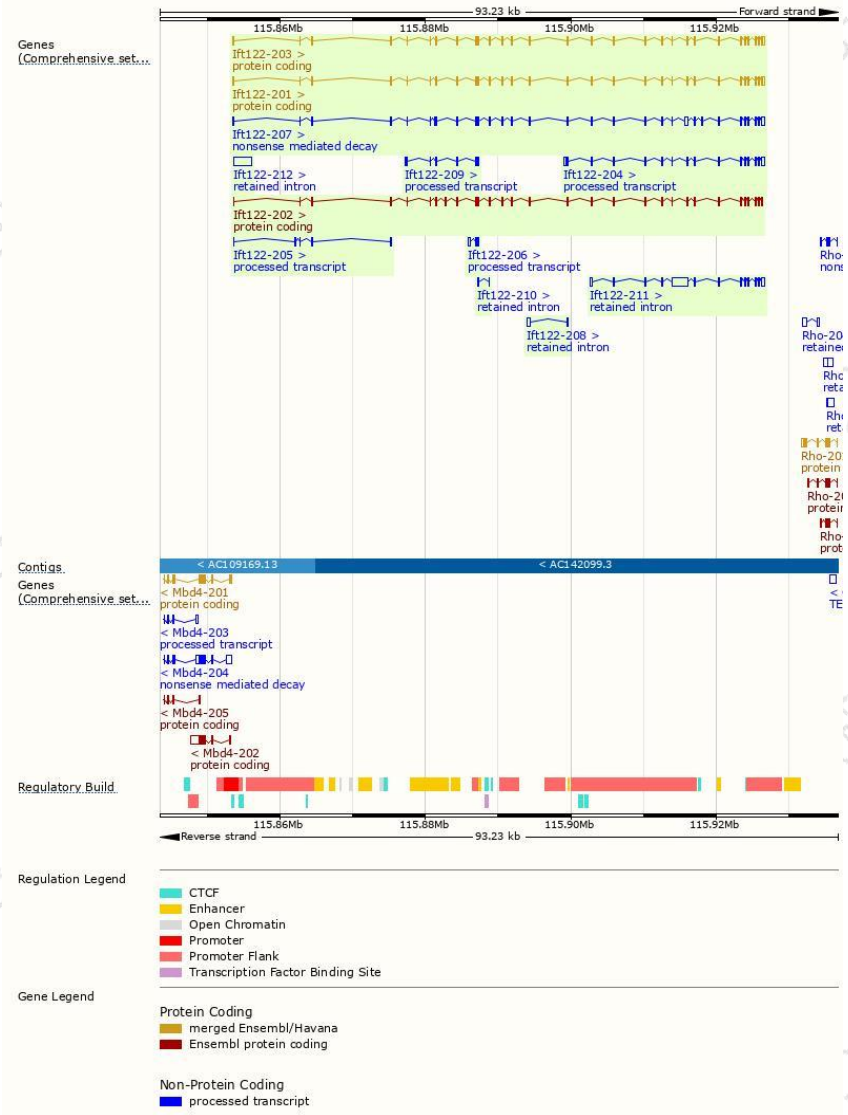
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ift122-203	ENSMUST00000112925.7	4122	1182aa	Protein coding	CCDS51880	Q6NWV3	TSL:1 GENCODE basic APPRIS ALT1
Ift122-201	ENSMUST00000038234.12	4056	1183aa	Protein coding	CCDS20445	Q6NWV3	TSL:1 GENCODE basic APPRIS P3
Ift122-202	ENSMUST00000112923.6	3765	1241aa	Protein coding	-	E9Q9G8	TSL:5 GENCODE basic APPRIS ALT1
Ift122-207	ENSMUST00000141305.7	4444	209aa	Nonsense mediated decay	-	S4R282	TSL:1
Ift122-204	ENSMUST00000124283.7	2519	No protein	Processed transcript	-	-	TSL:1
Ift122-209	ENSMUST00000149083.7	777	No protein	Processed transcript	-	-	TSL:3
Ift122-206	ENSMUST00000138113.1	618	No protein	Processed transcript	-	-	TSL:3
Ift122-205	ENSMUST00000125889.1	504	No protein	Processed transcript	-	-	TSL:3
Ift122-211	ENSMUST00000155565.1	4267	No protein	Retained intron	-	-	TSL:1
Ift122-212	ENSMUST00000203243.1	2491	No protein	Retained intron	-	-	TSL:NA
Ift122-208	ENSMUST00000146950.7	585	No protein	Retained intron	-	-	TSL:3
Ift122-210	ENSMUST00000152092.1	338	No protein	Retained intron	-	-	TSL:3

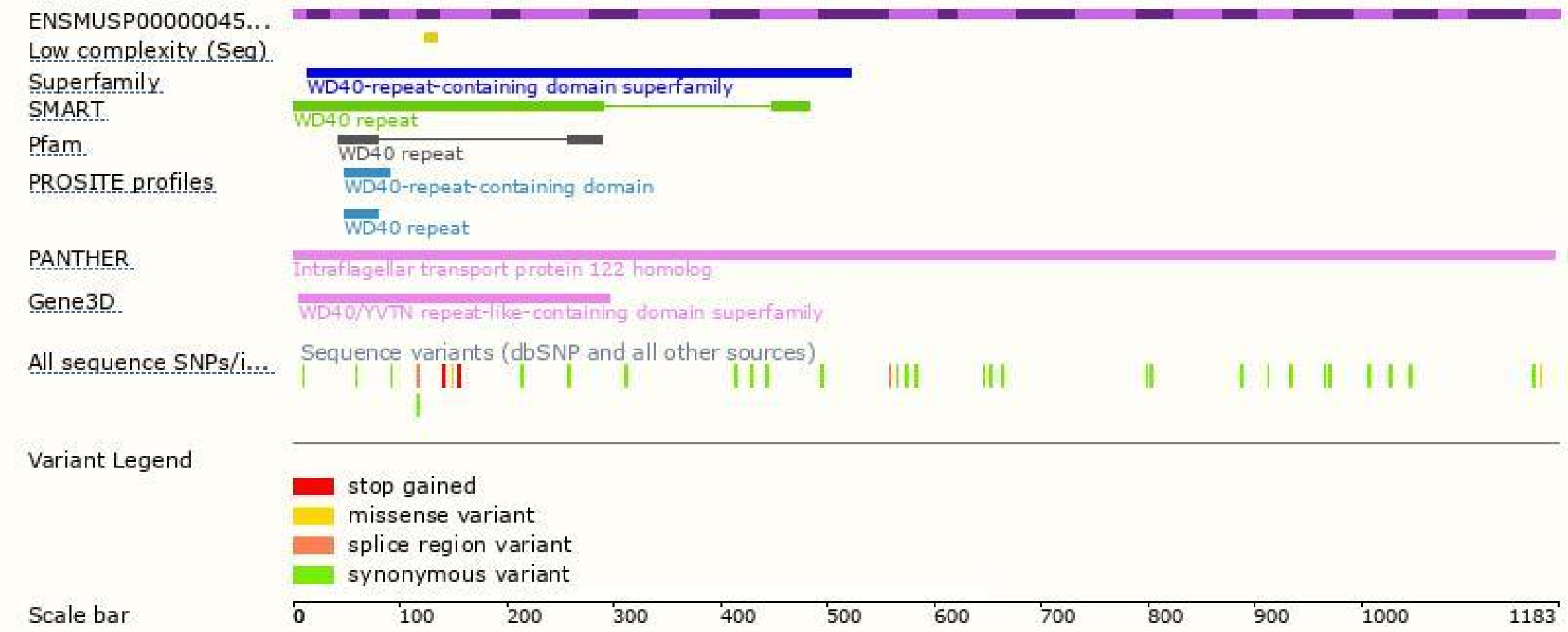
The strategy is based on the design of *Ift122-201* transcript,the transcription is shown below:



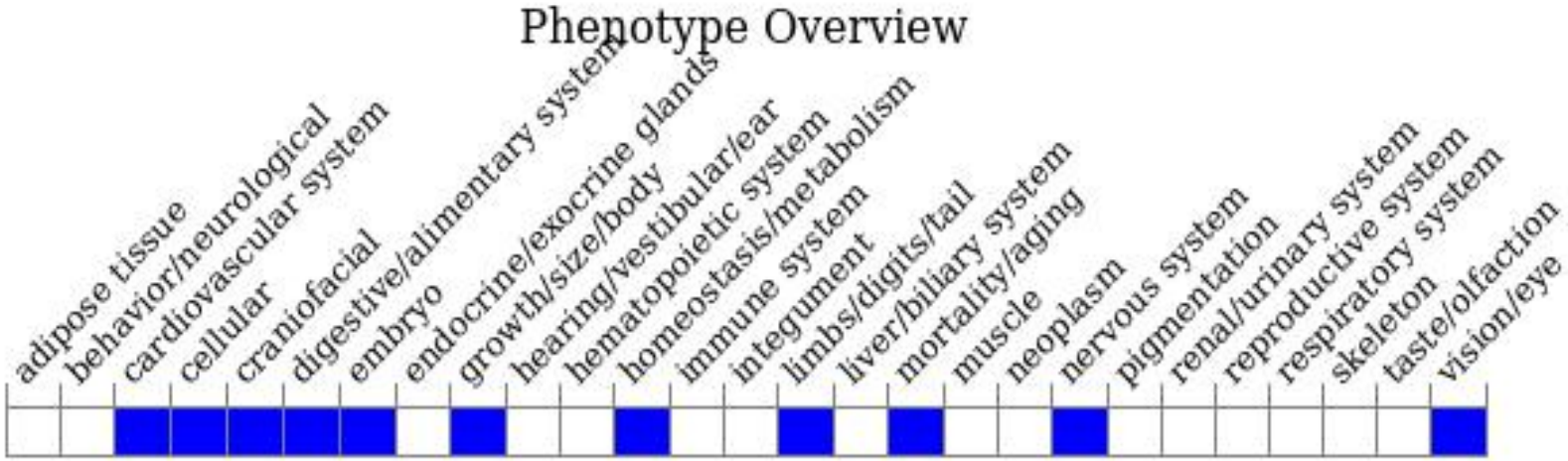
Genomic location distribution



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/).

According to the existing MGI data,homozygotes for a null mutation display embryonic lethality during organogenesis with exencephaly, a ventralized caudal neural tube, preaxial polydactyly, abnormal cilia, and left-right patterning defects.

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