Zfp36 Cas9-KO *Strategy*

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Reviewer: **Huan Fan**
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Project Overview

Project Name	***Zfp36***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

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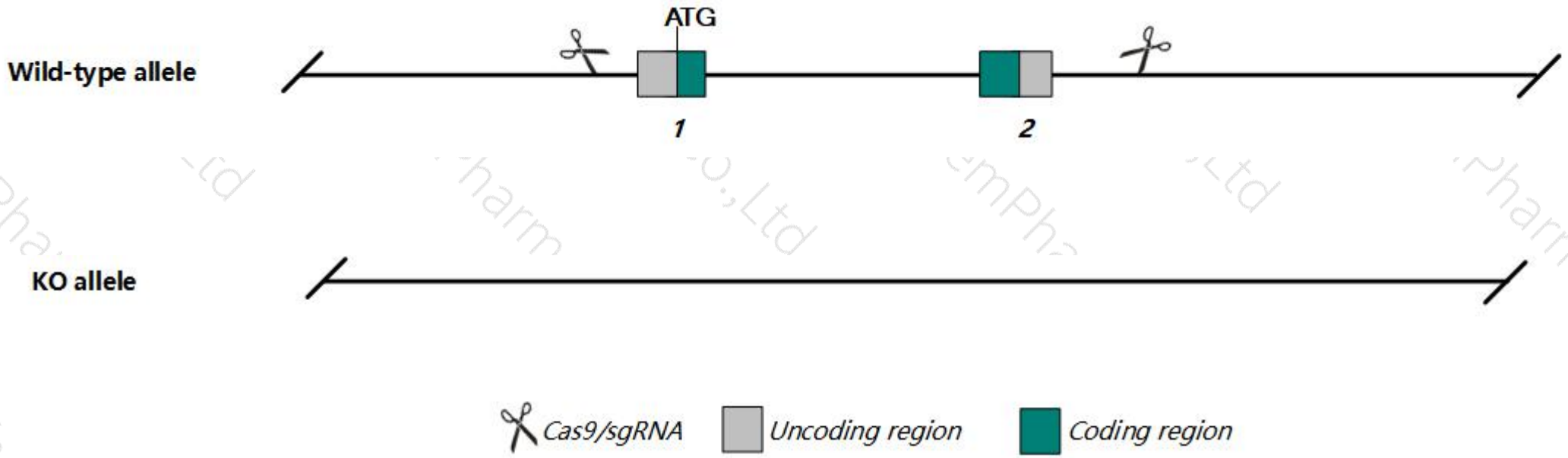
This model will use CRISPR/Cas9 technology to edit the *Zfp36* gene. The schematic diagram is as follows:



Technical routes

- The *Zfp36* gene has 2 transcripts.According to the structure of *Zfp36* gene, exon 1-2 of *Zfp36*-201 (ENSMUST00000051241.6) transcript is recommended as the knockout region.The region contains all coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Zfp36* gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9, gRNA 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 are normal at birth but soon develop myeloid hyperplasia, cachexia, patchy alopecia, dermatitis, arthritis, loss of adiposity, conjunctivitis, glomerular mesangial thickening and autoimmunity, with variable severity. All aspects of the syndrome are normalized by TNF antibody treatment.
- The KO region contains functional region of the *GM44710* gene, Knockout the region may affect the function of *GM44710* gene； The KO region is about 4.2kb away from *Plekhg2* gene, Knockout the region may affect the function of *Plekhg2* gene.
- The *Zfp36* 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 the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

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Zfp36 zinc finger protein 36 [*Mus musculus* (house mouse)]

Gene ID: 22695, updated on 10-Oct-2019

Summary

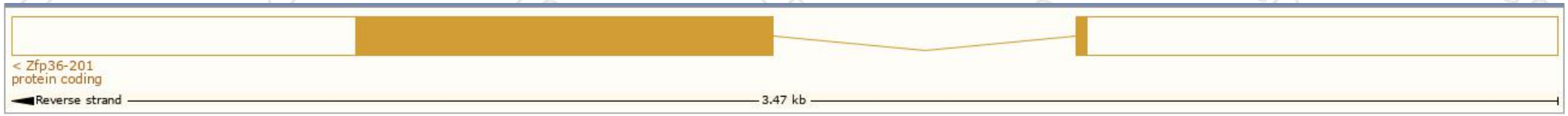
Official Symbol	Zfp36 provided by MGI
Official Full Name	zinc finger protein 36 provided by MGI
Primary source	MGI:MGI:99180
See related	Ensembl:ENSMUSG00000044786
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ttp; Gos24; TISII; Tis11; Nup475; TIS11D; Zfp-36
Expression	Broad expression in duodenum adult (RPKM 98.7), small intestine adult (RPKM 88.7) and 18 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

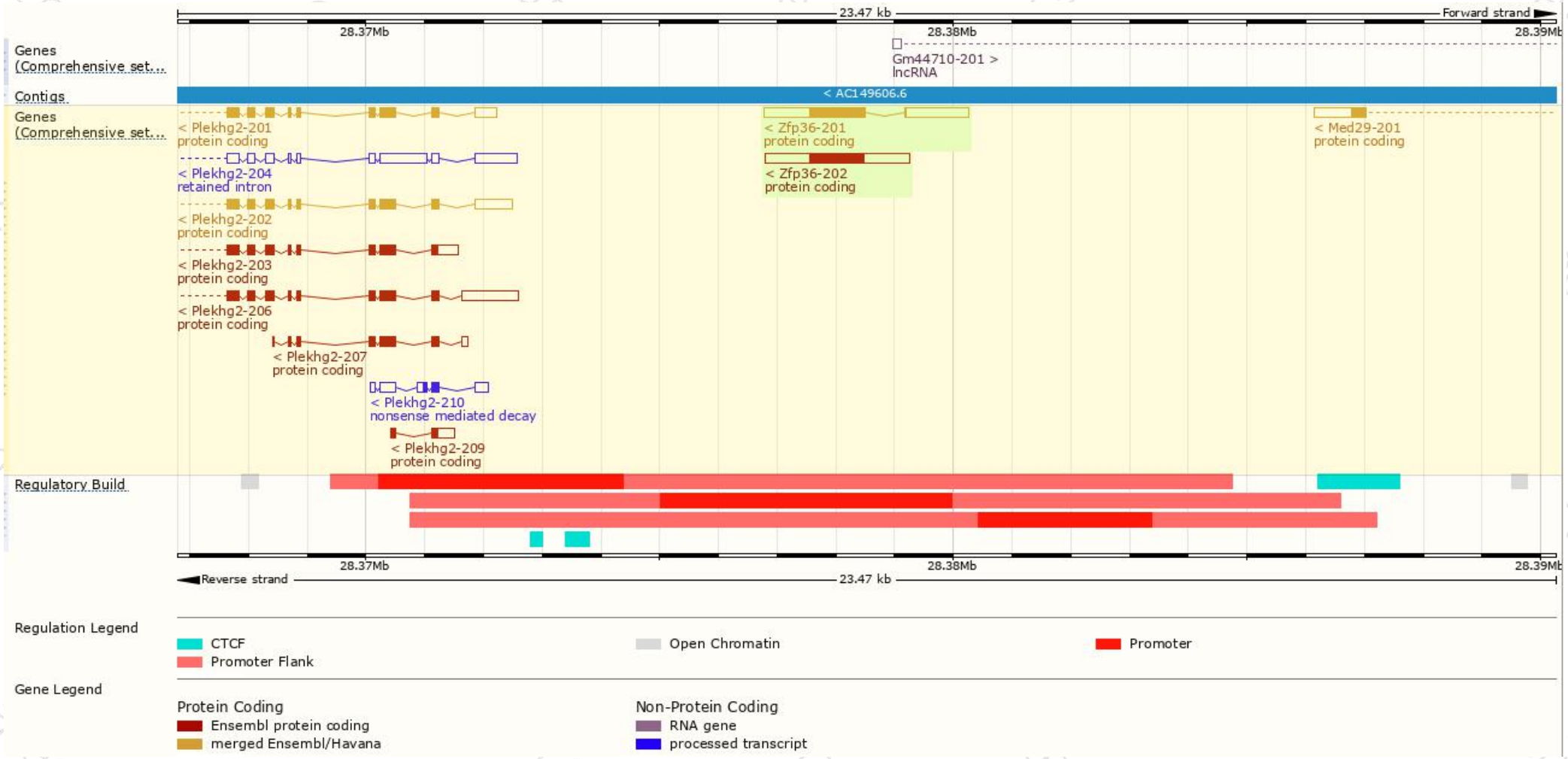
The gene has 2 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zfp36-202	ENSMUST00000209061.1	2465	307aa	Protein coding	-	Q9DBE5	TSL:NA GENCODE basic APPRIS ALT2
Zfp36-201	ENSMUST00000051241.6	2790	319aa	Protein coding	CCDS21041	P22893 Q3U3D2	TSL:1 GENCODE basic APPRIS P2

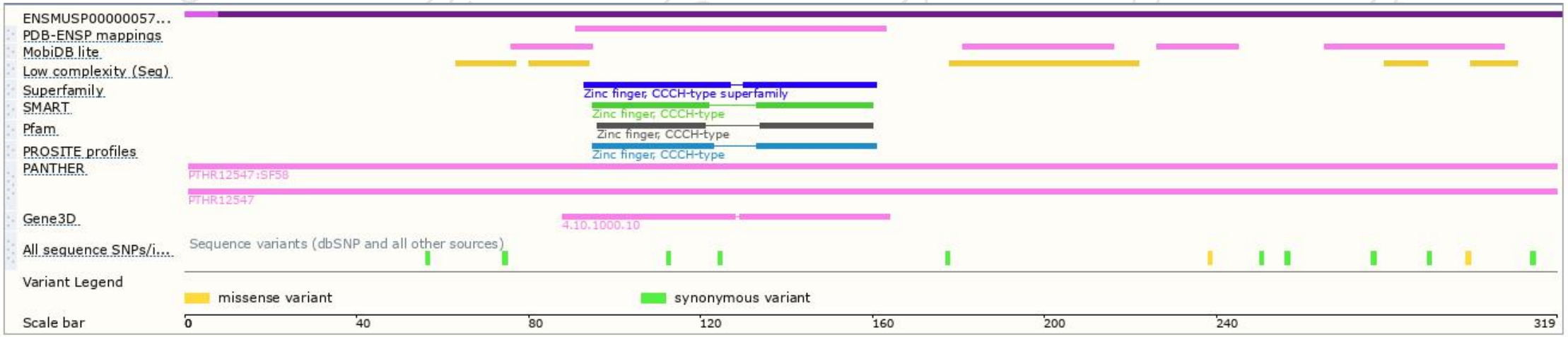
The strategy is based on the design of *Zfp36*-201 transcript,The transcription is shown below



Genomic location distribution



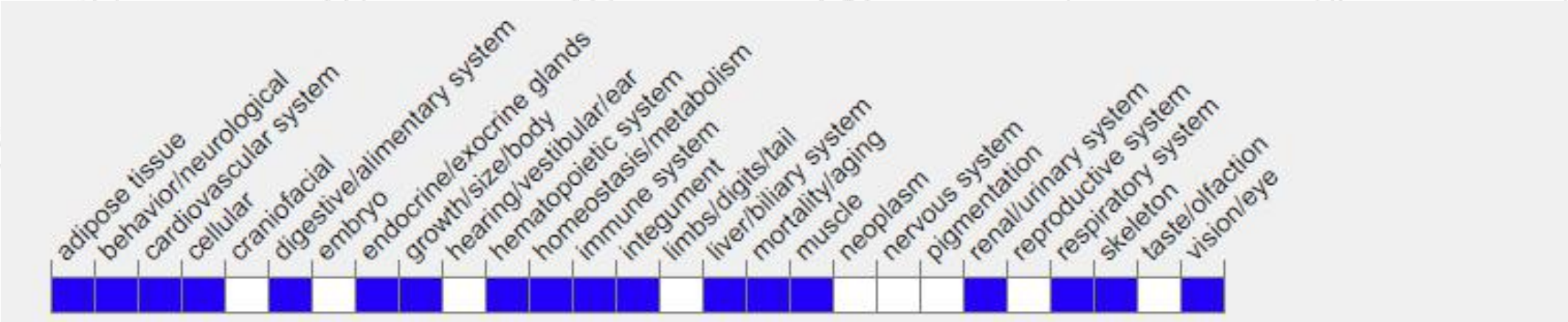
Protein domain



Statistics

Ave. residue weight: 105.371 g/mol
Charge: 10.5
Isoelectric point: 8.4247
Molecular weight: 33,613.43 g/mol
Number of residues: 319 aa

Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/) .

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