

Odf2 Cas9-KO Strategy

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Design Date:

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Project Overview

Project Name

Odf2

Project type

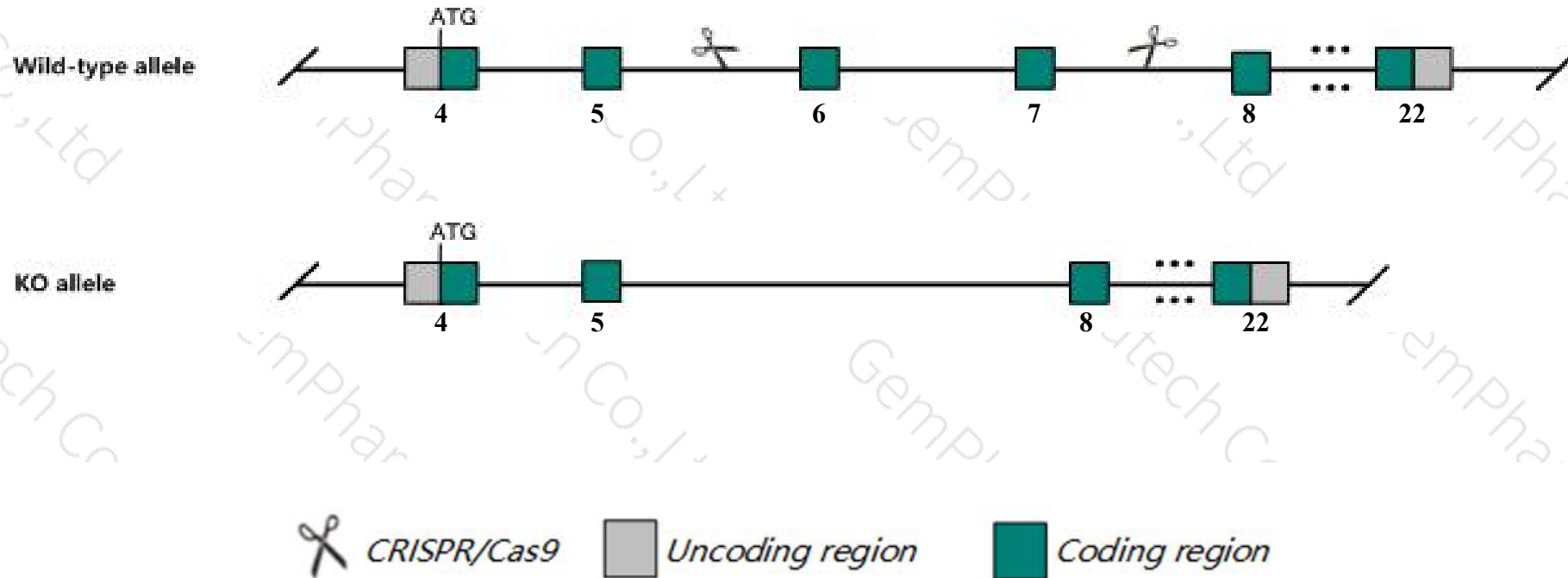
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Odf2* gene. The schematic diagram is as follows:



- The *Odf2* gene has 25 transcripts. According to the structure of *Odf2* gene, exon6-exon7 of *Odf2-202* (ENSMUST00000046571.13) transcript is recommended as the knockout region. The region contains 332bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Odf2* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Mice homozygous for a gene trapped allele exhibit embryonic lethality before implantation and transmission ratio distortion while all heterozygous males display normal development and fertility. Males heterozygous for other alleles are either infertile or show reduced fertility.
- The *Odf2* gene is located on the Chr2. 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)

Odf2 outer dense fiber of sperm tails 2 [*Mus musculus* (house mouse)]

Gene ID: 18286, updated on 14-Aug-2019

Summary

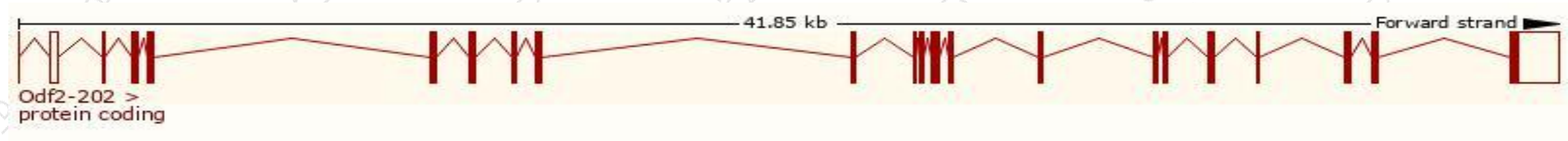
Official Symbol	Odf2 provided by MGI
Official Full Name	outer dense fiber of sperm tails 2 provided by MGI
Primary source	MGI:MGI:1098824
See related	Ensembl:ENSMUSG000000026790
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI848335; MMTEST29
Expression	Biased expression in testis adult (RPKM 224.3), cerebellum adult (RPKM 22.9) and 4 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

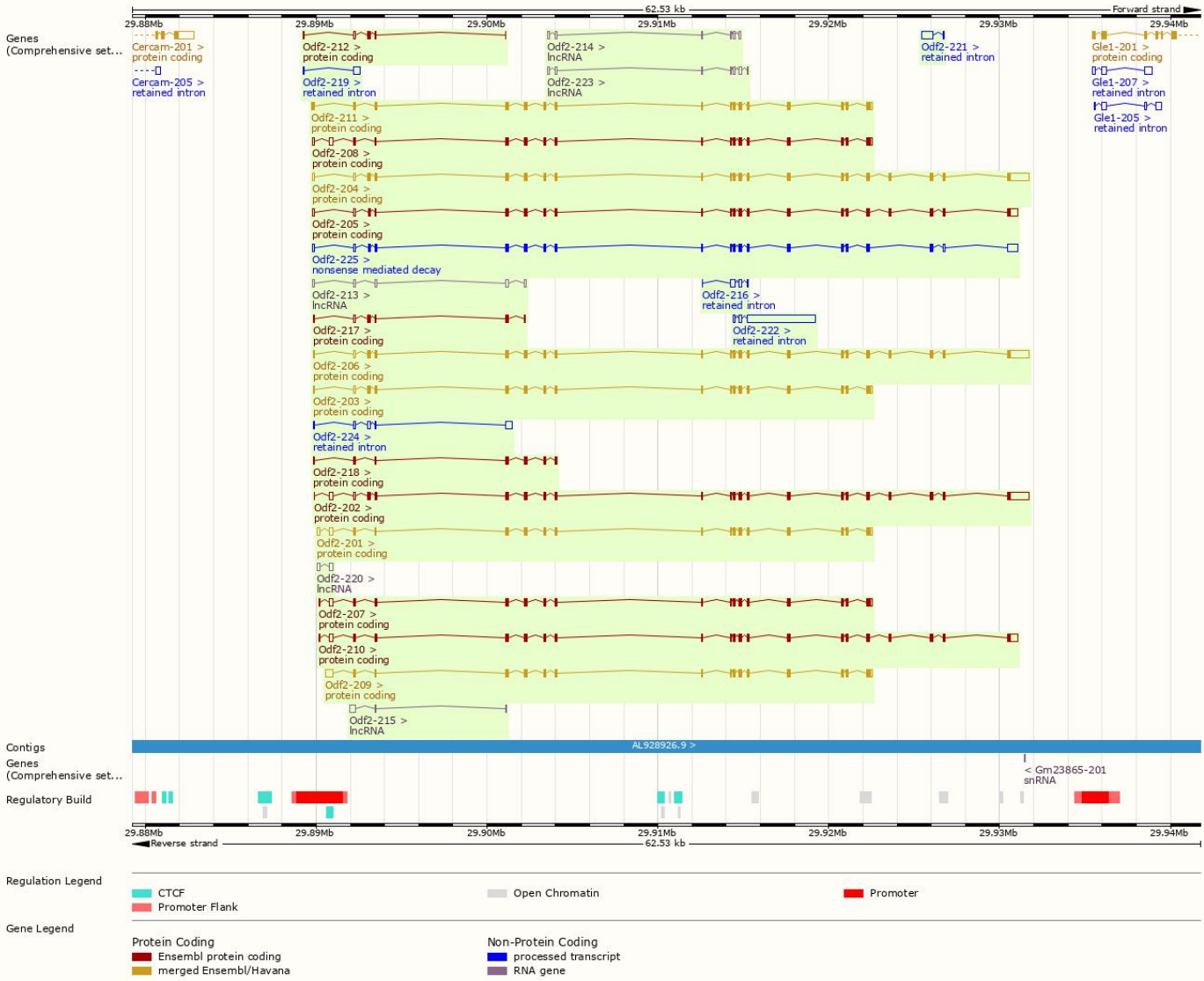
The gene has 25 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Odf2-202	ENSMUST00000046571.13	3959	825aa	Protein coding	CCDS050556	A3KGV1	TSL:2 GENCODE basic APPRIS ALT1
Odf2-204	ENSMUST000000113756.7	3826	825aa	Protein coding	CCDS050556	A3KGV1	TSL:1 GENCODE basic APPRIS ALT1
Odf2-206	ENSMUST000000113759.8	3807	826aa	Protein coding	CCDS050555	A3KGV1	TSL:1 GENCODE basic APPRIS ALT1
Odf2-209	ENSMUST000000113764.3	2450	638aa	Protein coding	CCDS15861	A3KGV1	TSL:5 GENCODE basic APPRIS P3
Odf2-201	ENSMUST00000028128.12	2376	638aa	Protein coding	CCDS15861	A3KGV1	TSL:1 GENCODE basic APPRIS P3
Odf2-208	ENSMUST000000113763.7	2364	638aa	Protein coding	CCDS15861	A3KGV1	TSL:5 GENCODE basic APPRIS P3
Odf2-203	ENSMUST000000113755.7	2305	652aa	Protein coding	CCDS050557	A3KGV1	TSL:1 GENCODE basic
Odf2-211	ENSMUST000000113767.7	2249	701aa	Protein coding	CCDS050554	A3KGW0	TSL:1 GENCODE basic APPRIS ALT1
Odf2-210	ENSMUST000000113765.7	3188	830aa	Protein coding	-	A3KGV1	TSL:5 GENCODE basic APPRIS ALT1
Odf2-205	ENSMUST000000113757.7	3082	806aa	Protein coding	-	A3KGV1	TSL:5 GENCODE basic
Odf2-207	ENSMUST000000113762.7	2353	657aa	Protein coding	-	A3KGV9	TSL:5 GENCODE basic
Odf2-218	ENSMUST000000137558.7	814	271aa	Protein coding	-	F6Y325	CDS 5' and 3' incomplete TSL:3
Odf2-217	ENSMUST000000133233.7	658	138aa	Protein coding	-	A3KGV3	CDS 3' incomplete TSL:2
Odf2-212	ENSMUST000000123335.7	403	69aa	Protein coding	-	A3KGV2	CDS 3' incomplete TSL:3
Odf2-225	ENSMUST000000184845.7	3035	680aa	Nonsense mediated decay	-	V9GXZ0	TSL:5
Odf2-222	ENSMUST000000152503.1	4291	No protein	Retained intron	-	-	TSL:1
Odf2-224	ENSMUST000000153216.7	828	No protein	Retained intron	-	-	TSL:2
Odf2-221	ENSMUST000000152026.1	673	No protein	Retained intron	-	-	TSL:3
Odf2-216	ENSMUST000000131165.7	553	No protein	Retained intron	-	-	TSL:5
Odf2-219	ENSMUST000000148883.1	437	No protein	Retained intron	-	-	TSL:2
Odf2-223	ENSMUST000000152932.7	793	No protein	lncRNA	-	-	TSL:5
Odf2-214	ENSMUST000000129960.7	674	No protein	lncRNA	-	-	TSL:3
Odf2-213	ENSMUST000000126103.7	589	No protein	lncRNA	-	-	TSL:2
Odf2-215	ENSMUST000000130899.1	395	No protein	lncRNA	-	-	TSL:3
Odf2-220	ENSMUST000000150827.1	349	No protein	lncRNA	-	-	TSL:3

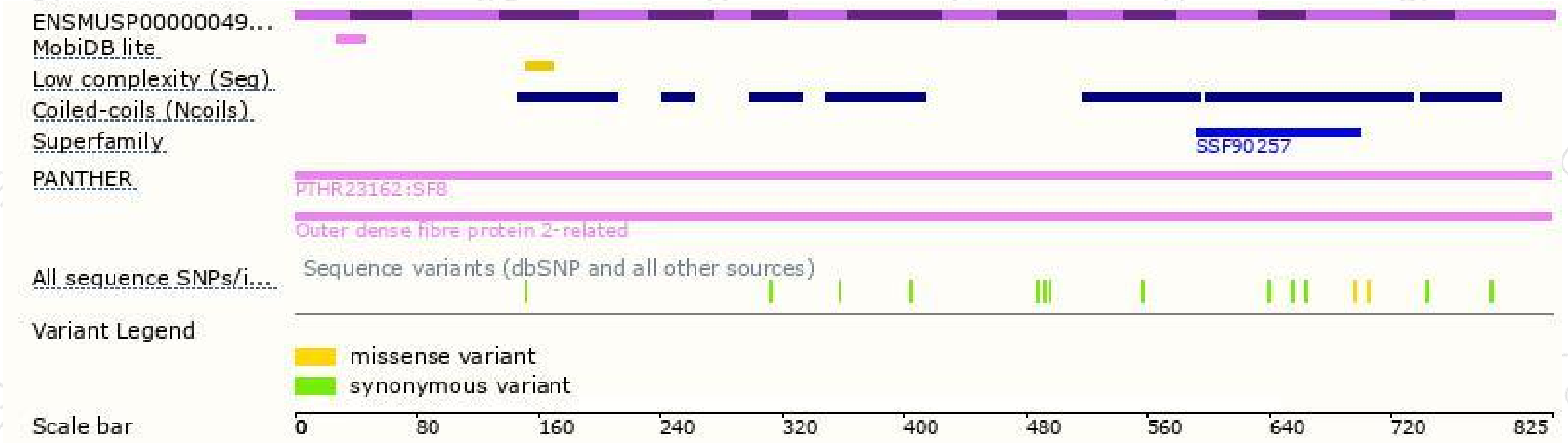
The strategy is based on the design of *Odf2-202* transcript,The transcription is shown below



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, Mice homozygous for a gene trapped allele exhibit embryonic lethality before implantation and transmission ratio distortion while all heterozygous males display normal development and fertility. Males heterozygous for other alleles are either infertile or show reduced fertility.

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

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