Art3 Cas9-CKO Strategy

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Project Overview

Project Name	***Art3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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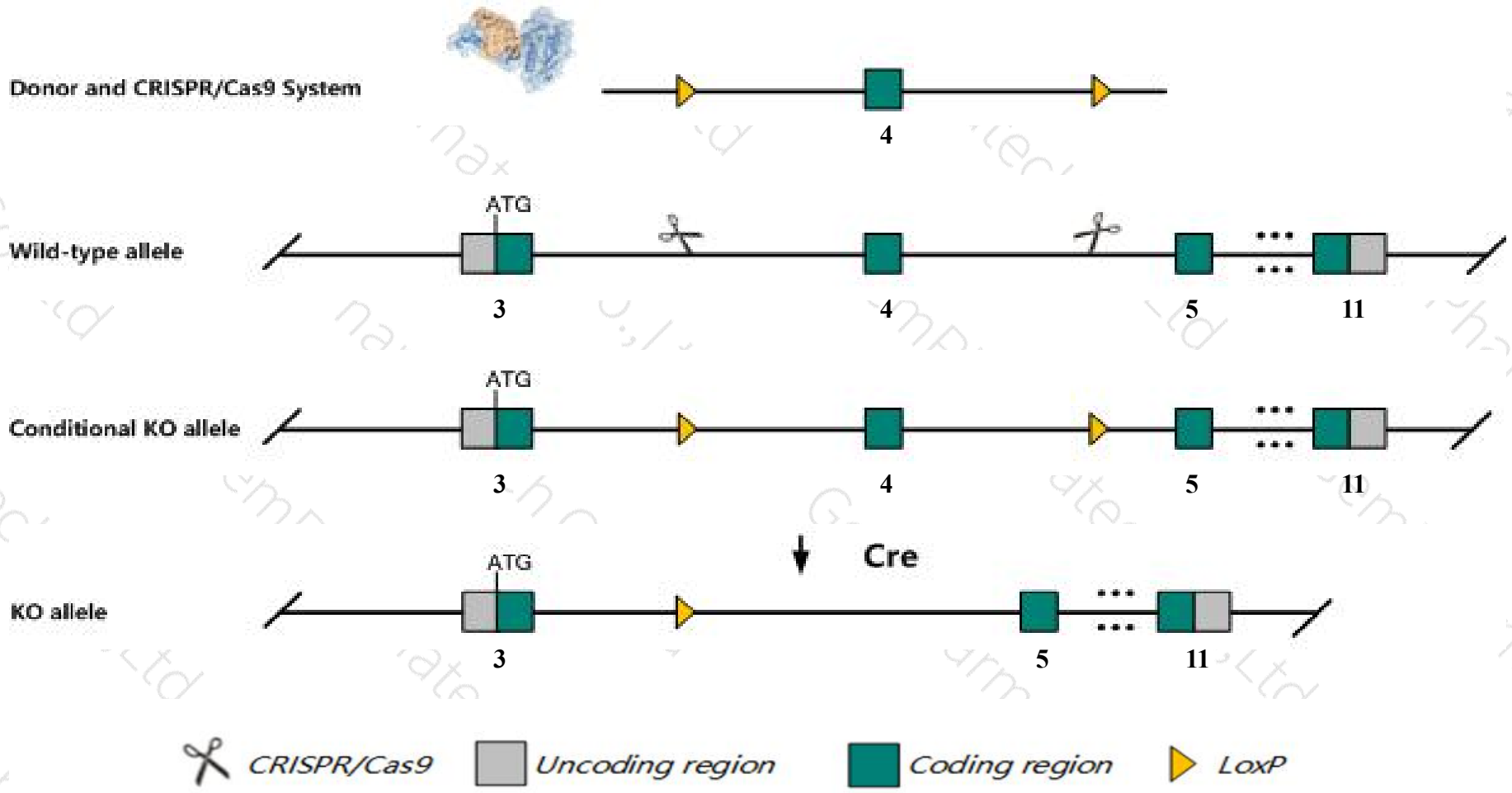
This model will use CRISPR/Cas9 technology to edit the *Art3* gene. The schematic diagram is as follows:



Technical routes

- The *Art3* gene has 19 transcripts. According to the structure of *Art3* gene, exon4 of *Art3-208* (ENSMUST00000121096.7) transcript is recommended as the knockout region.The region contains 709bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Art3* 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 *Art3* gene is located on the Chr5. 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）

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Art3 ADP-ribosyltransferase 3 [*Mus musculus* (house mouse)]

Gene ID: 109979, updated on 13-Mar-2020

Summary

Official Symbol	Art3 provided by MGI
Official Full Name	ADP-ribosyltransferase 3 provided by MGI
Primary source	MGI:MGI:1202729
See related	Ensembl:ENSMUSG00000034842
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	ARTC3; 4930569O04Rik
Expression	Biased expression in bladder adult (RPKM 97.0), testis adult (RPKM 41.5) and 4 other tissues See more
Orthologs	human all

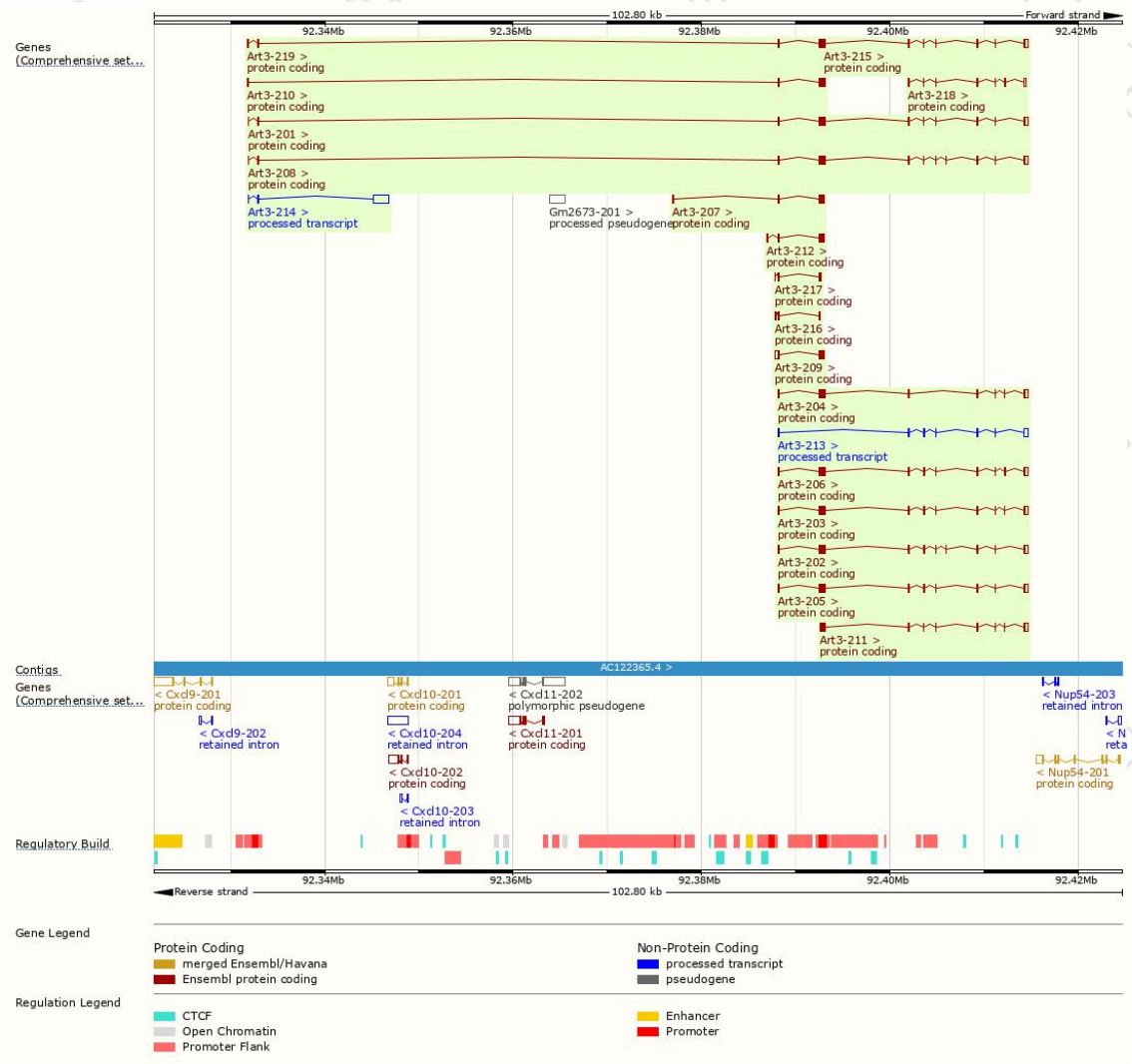
Transcript information（Ensembl）

The gene has 19 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Art3-208	ENSMUST00000121096.7	1600	373aa	Protein coding	CCDS80328	E9QNU1	TSL:1 GENCODE basic APPRIS ALT2
Art3-201	ENSMUST00000113083.8	1561	361aa	Protein coding	CCDS51546	Q8R2G4	TSL:5 GENCODE basic APPRIS P3
Art3-204	ENSMUST00000119587.7	1310	350aa	Protein coding	CCDS84904	Q8R2G4	TSL:1 GENCODE basic APPRIS ALT2
Art3-206	ENSMUST00000120416.7	1478	408aa	Protein coding	-	A0A0R4J1N4	TSL:1 GENCODE basic APPRIS ALT2
Art3-202	ENSMUST00000117108.7	1408	383aa	Protein coding	-	E9Q7Q8	TSL:5 GENCODE basic APPRIS ALT2
Art3-203	ENSMUST00000118106.7	1401	375aa	Protein coding	-	A0A0R4J1Q4	TSL:1 GENCODE basic APPRIS ALT2
Art3-205	ENSMUST00000120193.7	1371	365aa	Protein coding	-	A0A0R4J1M9	TSL:1 GENCODE basic APPRIS ALT2
Art3-211	ENSMUST00000126281.7	1187	310aa	Protein coding	-	F6RER8	CDS 5' incomplete TSL:3
Art3-209	ENSMUST00000124509.1	869	192aa	Protein coding	-	E9Q9Q8	CDS 3' incomplete TSL:2
Art3-210	ENSMUST00000125462.7	824	244aa	Protein coding	-	E9Q1U7	CDS 3' incomplete TSL:1
Art3-207	ENSMUST00000120781.7	732	215aa	Protein coding	-	E9Q7Z7	CDS 3' incomplete TSL:5
Art3-212	ENSMUST00000128246.7	732	206aa	Protein coding	-	E9Q8Z0	CDS 3' incomplete TSL:1
Art3-219	ENSMUST00000154245.7	714	178aa	Protein coding	-	E9Q984	CDS 3' incomplete TSL:1
Art3-215	ENSMUST00000138003.7	684	142aa	Protein coding	-	F6W3A0	CDS 5' incomplete TSL:2
Art3-218	ENSMUST00000152041.1	494	84aa	Protein coding	-	F6Z2C7	CDS 5' incomplete TSL:5
Art3-217	ENSMUST00000145072.7	388	108aa	Protein coding	-	E9Q630	CDS 3' incomplete TSL:2
Art3-216	ENSMUST00000138687.1	232	65aa	Protein coding	-	E9PVX7	CDS 3' incomplete TSL:3
Art3-214	ENSMUST00000135528.7	1815	No protein	Processed transcript	-	-	TSL:1
Art3-213	ENSMUST00000129222.1	662	No protein	Processed transcript	-	-	TSL:2

The strategy is based on the design of *Art3-208* transcript, the transcription is shown below

Genomic location distribution



Protein domain

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