

***Bcar3* Cas9-CKO Strategy**

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Project Overview

Project Name

Bcar3

Project type

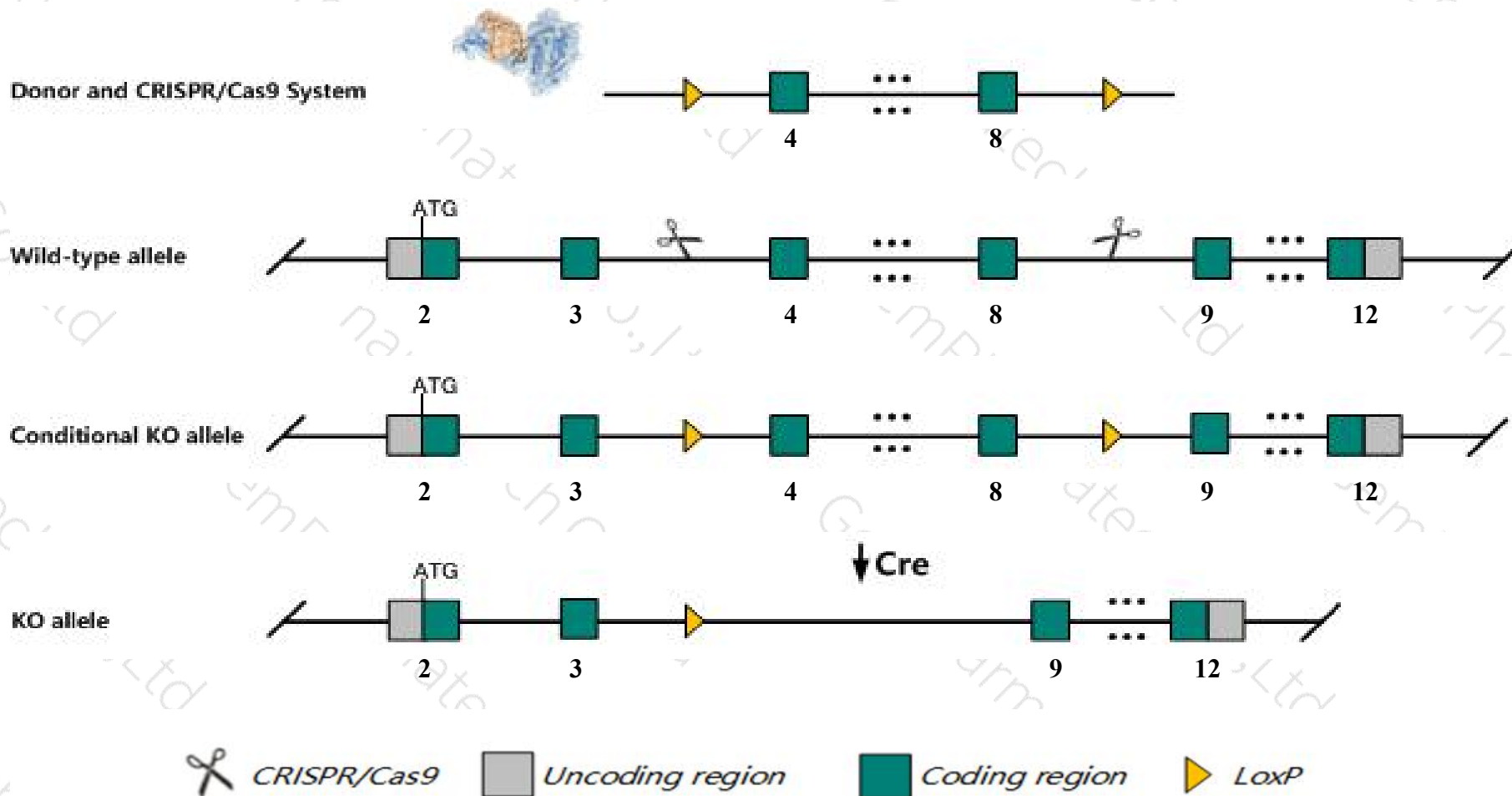
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Bcar3* gene. The schematic diagram is as follows:



- The *Bcar3* gene has 10 transcripts. According to the structure of *Bcar3* gene, exon4-exon8 of *Bcar3-201* (ENSMUST00000029766.8) transcript is recommended as the knockout region. The region contains 1448bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Bcar3* 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.

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit cataracts due to rupture of the lens capsule and liquefaction of lens cortical fibers.
- The *Bcar3* gene is located on the Chr3. 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)

Bcar3 breast cancer anti-estrogen resistance 3 [*Mus musculus* (house mouse)]

Gene ID: 29815, updated on 2-May-2020

Summary

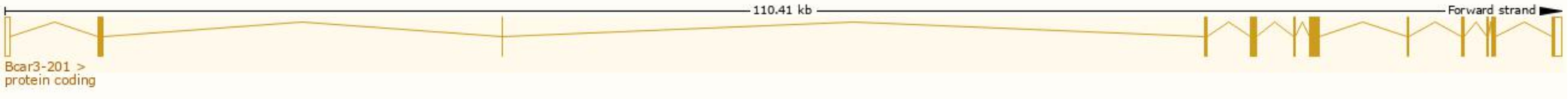
Official Symbol	Bcar3 provided by MGI
Official Full Name	breast cancer anti-estrogen resistance 3 provided by MGI
Primary source	MGI:MGI:1352501
See related	Ensembl:ENSMUSG00000028121
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AND-34; AI131758
Expression	Ubiquitous expression in large intestine adult (RPKM 13.2), subcutaneous fat pad adult (RPKM 13.1) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

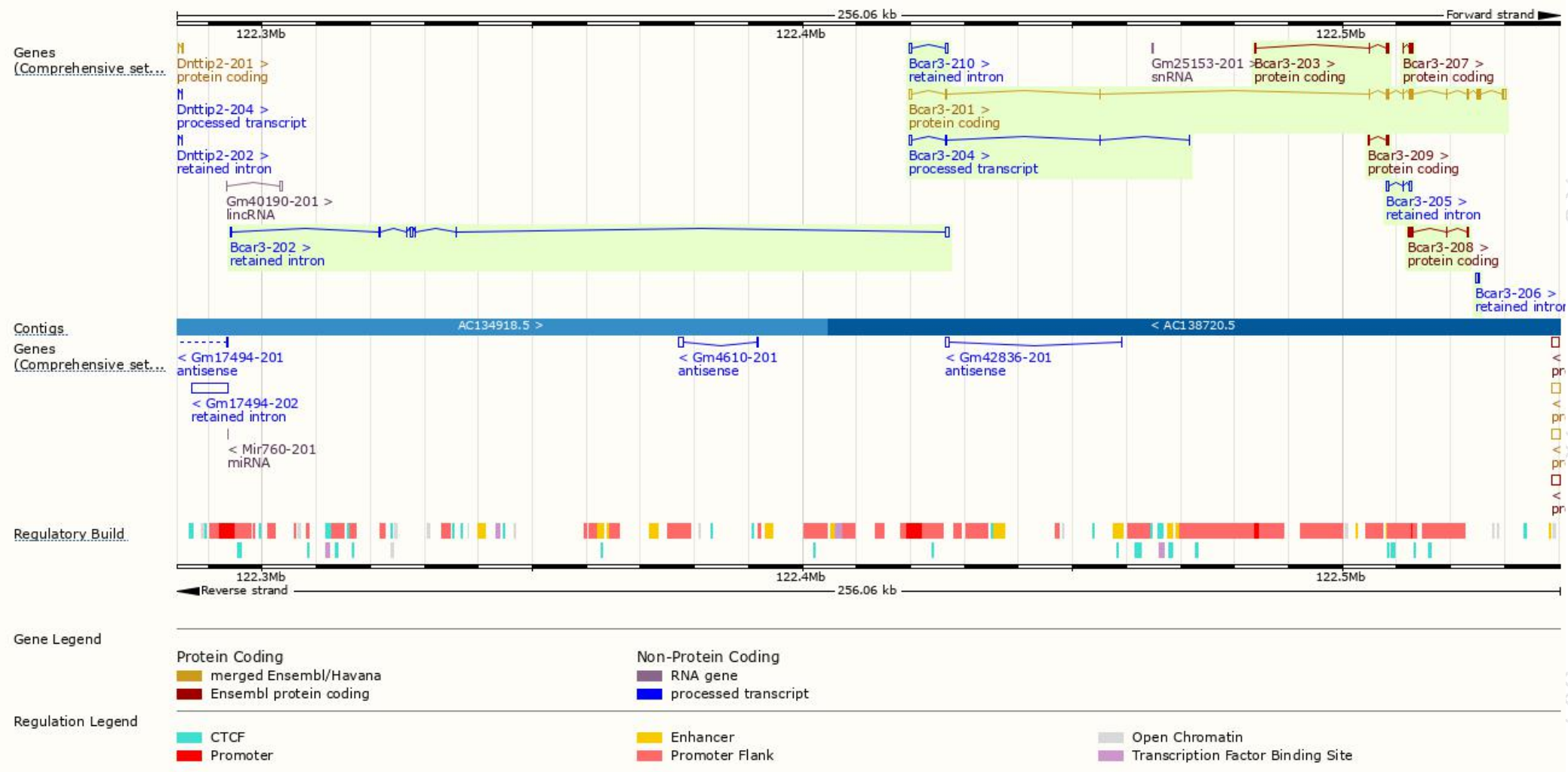
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bcar3-201	ENSMUST00000029766.8	3311	820aa	Protein coding	CCDS17810	Q9QZK2	TSL:1 GENCODE basic APPRIS P1
Bcar3-208	ENSMUST00000199344.1	855	260aa	Protein coding	-	A0A0G2JGV2	CDS 3' incomplete TSL:5
Bcar3-207	ENSMUST00000198659.1	781	186aa	Protein coding	-	A0A0G2JFC0	CDS 3' incomplete TSL:2
Bcar3-203	ENSMUST00000197073.1	722	178aa	Protein coding	-	A0A0G2JDR4	CDS 3' incomplete TSL:2
Bcar3-209	ENSMUST00000199358.1	705	144aa	Protein coding	-	A0A0G2JDE7	CDS 3' incomplete TSL:2
Bcar3-204	ENSMUST00000197590.1	766	No protein	Processed transcript	-	-	TSL:3
Bcar3-202	ENSMUST00000196134.1	1531	No protein	Retained intron	-	-	TSL:1
Bcar3-205	ENSMUST00000197956.1	1011	No protein	Retained intron	-	-	TSL:2
Bcar3-210	ENSMUST00000200544.1	849	No protein	Retained intron	-	-	TSL:2
Bcar3-206	ENSMUST00000197959.1	509	No protein	Retained intron	-	-	TSL:3

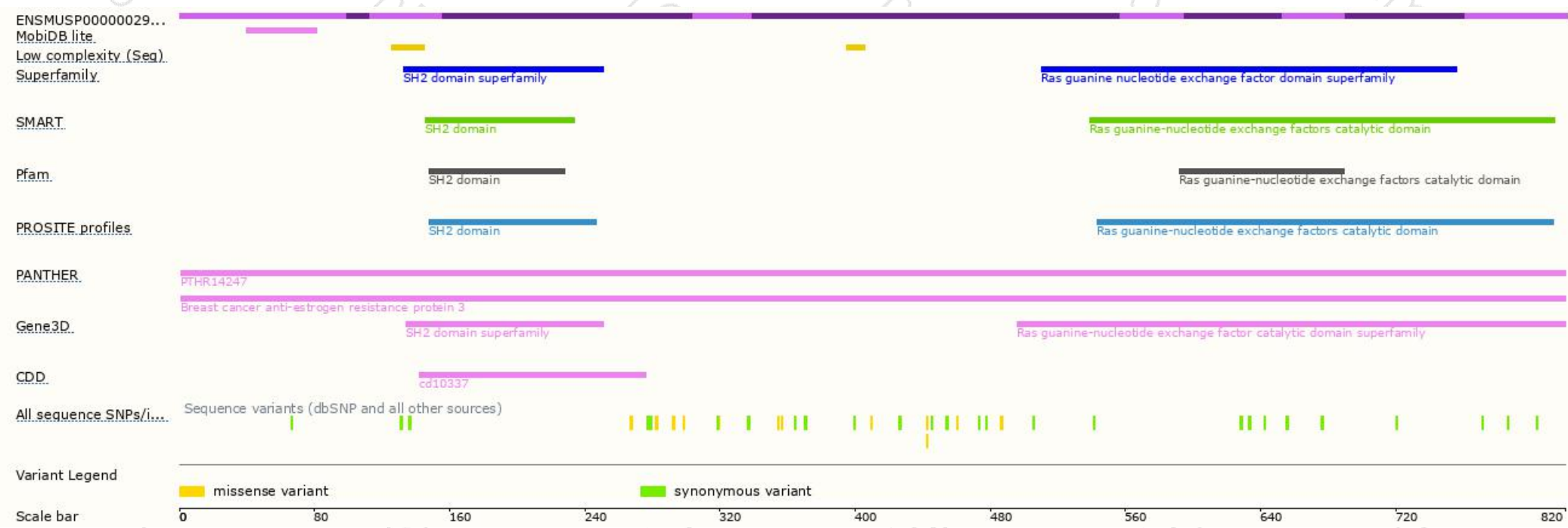
The strategy is based on the design of *Bcar3-201* transcript,the transcription is shown below:



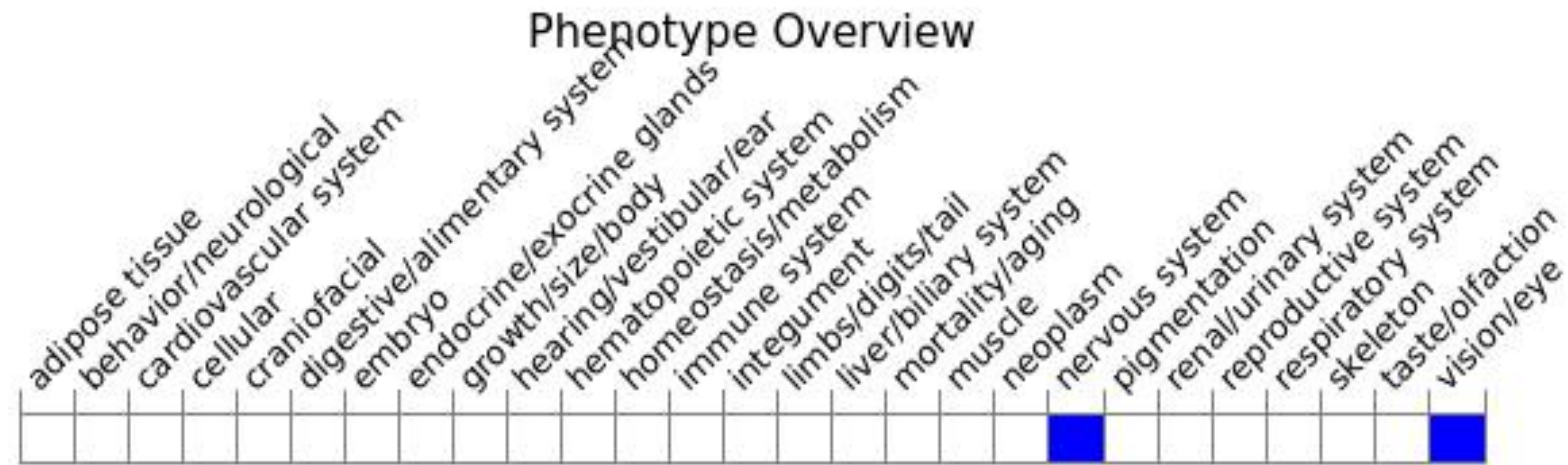
Genomic location distribution



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, mice homozygous for a knock-out allele exhibit cataracts due to rupture of the lens capsule and liquefaction of lens cortical fibers.

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

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