

***Rock1* Cas9-CKO Strategy**

Designer:

Daohua Xu

Reviewer:

Huimin Su

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Project Overview

Project Name

Rock1

Project type

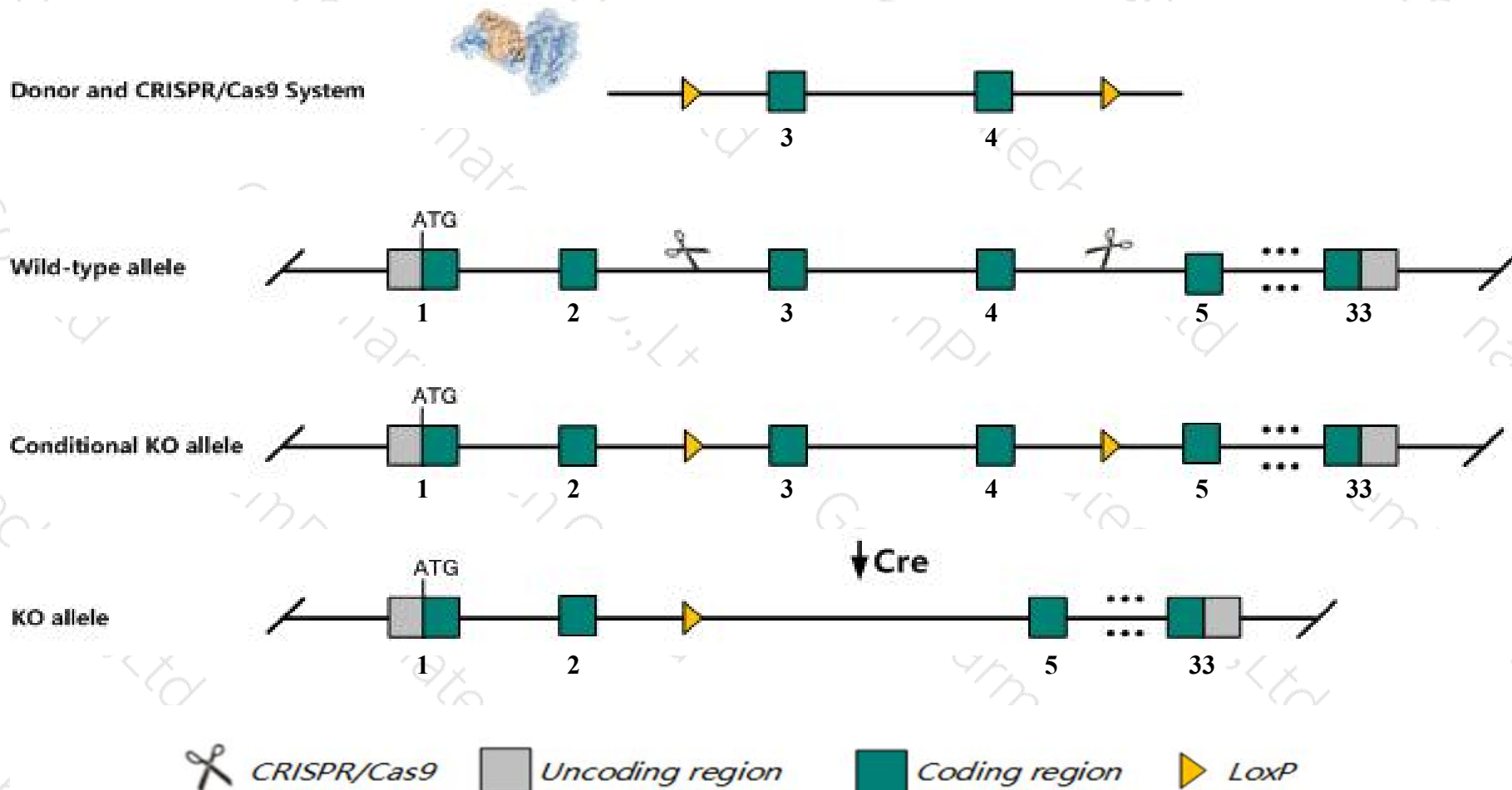
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rock1* gene. The schematic diagram is as follows:



- The *Rock1* gene has 8 transcripts. According to the structure of *Rock1* gene, exon3-exon4 of *Rock1*-201 (ENSMUST00000067947.6) transcript is recommended as the knockout region. The region contains 239bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rock1* 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, Homozygous null mice have open eyes at birth, omphalocele and most die soon after birth as a result of cannibalization by the mom. Survivors develop inflammation of the eyelid. Another homozygous mutant shows partial lethality around implantation and reduced cardiac fibrosis after pressure overload.
- The *Rock1* gene is located on the Chr18. 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)

Rock1 Rho-associated coiled-coil containing protein kinase 1 [Mus musculus (house mouse)]

Gene ID: 19877, updated on 9-Mar-2019

Summary



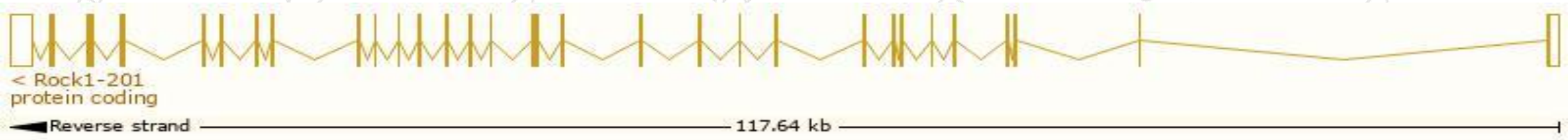
Official Symbol	Rock1 provided by MGI
Official Full Name	Rho-associated coiled-coil containing protein kinase 1 provided by MGI
Primary source	MGI:MGI:107927
See related	Ensembl:ENSMUSG00000024290
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110055K06Rik, Rock-I
Expression	Ubiquitous expression in bladder adult (RPKM 7.8), placenta adult (RPKM 6.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

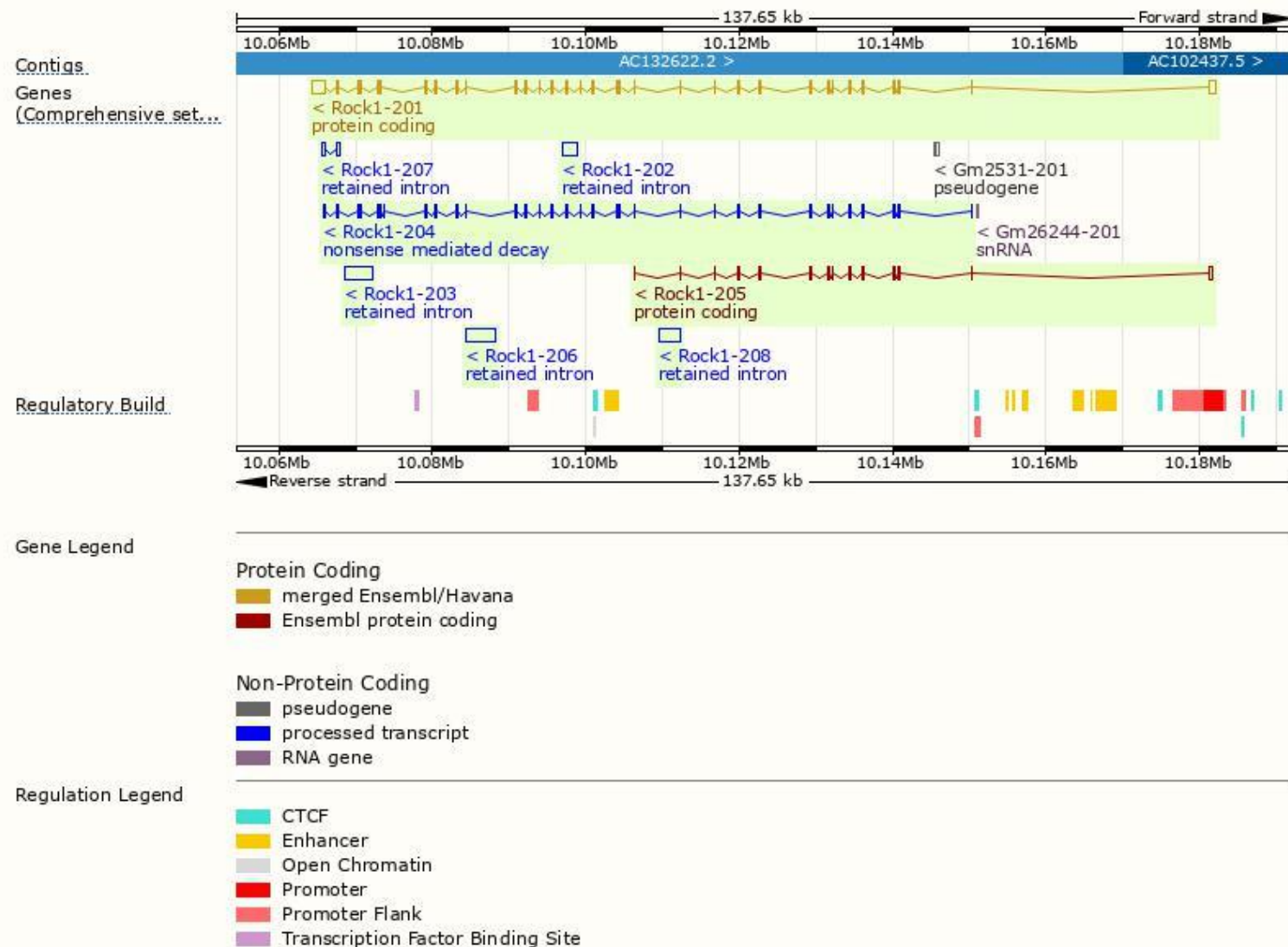
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rock1-201	ENSMUST00000067947.6	6440	1354aa	Protein coding	CCDS29053	P70335	TSL:5 GENCODE basic APPRIS P1
Rock1-205	ENSMUST00000234734.1	1989	504aa	Protein coding	-	-	CDS 3' incomplete
Rock1-204	ENSMUST00000234610.1	4320	1089aa	Nonsense mediated decay	-	-	
Rock1-206	ENSMUST00000234926.1	3840	No protein	Retained intron	-	-	
Rock1-203	ENSMUST00000234463.1	3494	No protein	Retained intron	-	-	
Rock1-208	ENSMUST00000235075.1	2735	No protein	Retained intron	-	-	
Rock1-202	ENSMUST00000234050.1	1877	No protein	Retained intron	-	-	
Rock1-207	ENSMUST00000235067.1	813	No protein	Retained intron	-	-	

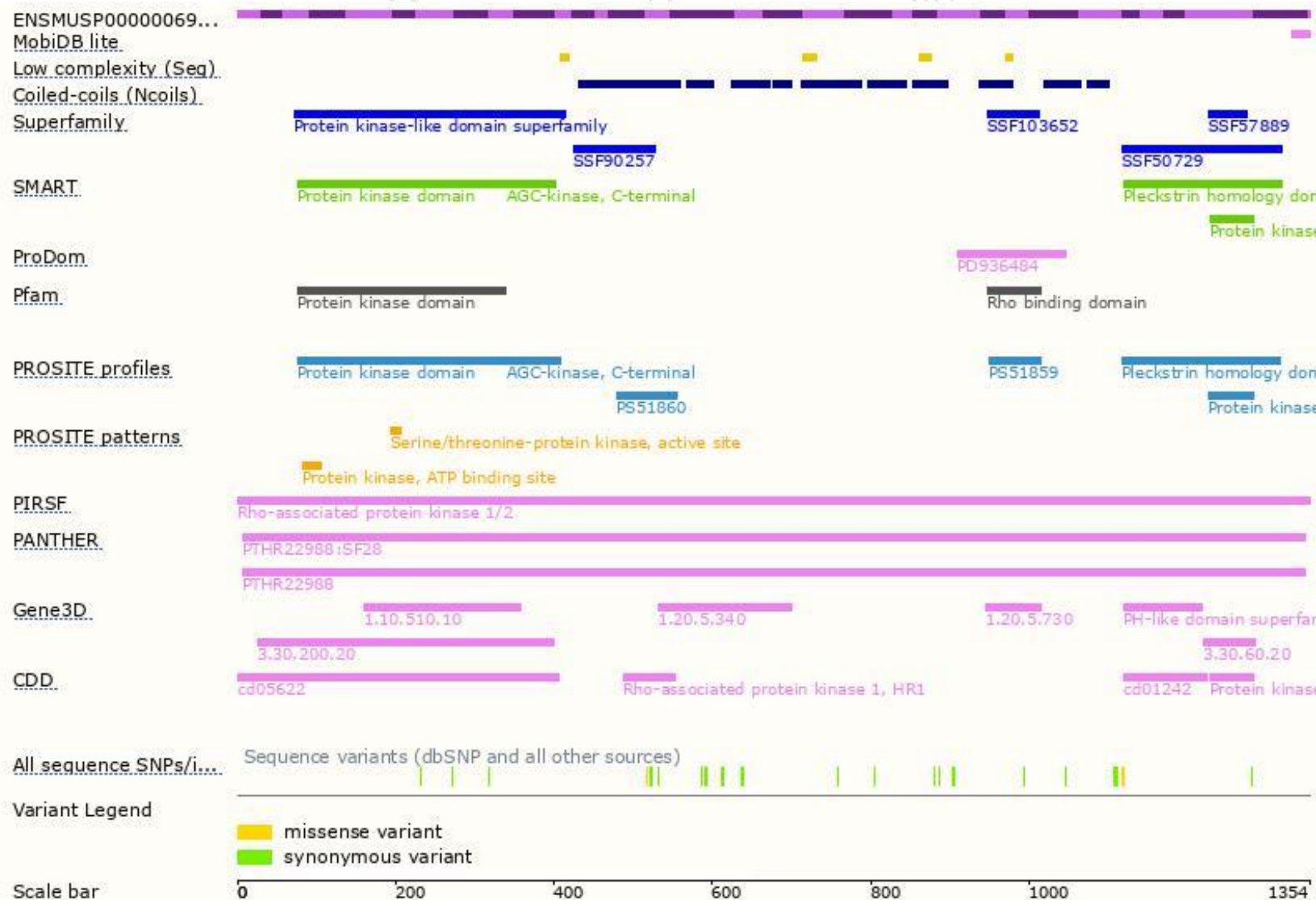
The strategy is based on the design of *Rock1-201* transcript,The transcription is shown below



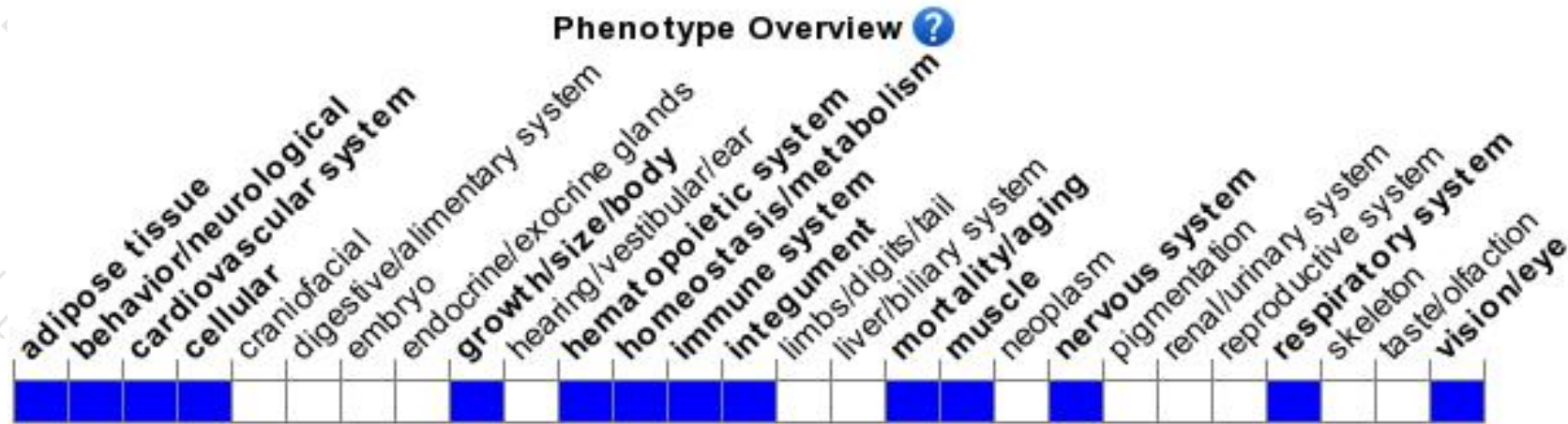
Genomic location distribution



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/>).

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

Tel: 400-9660890

