

***Sox2-iCre-PolyA* TG Strategy**

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Reviewer:

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Project Overview

Project Name

Sox2-iCre-PolyA

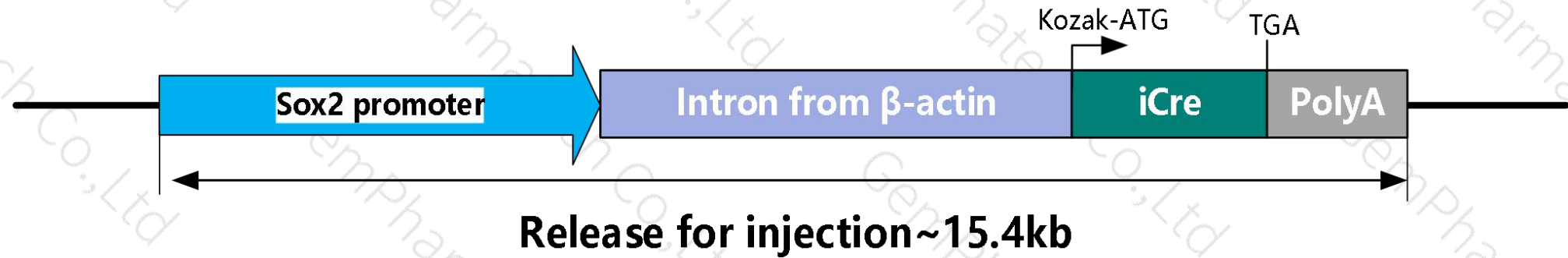
Project type

TG

Strain background

C57BL/6J

This mice model is made by transgenic technology, and the schematic diagram is as follows:



- Kozak: Kozak sequence (GCCGCCACC) will be added before the ATG, in order for the ribosome to recognize the initiation codon.

Mouse *Sox2* Promoter from Reference [1]

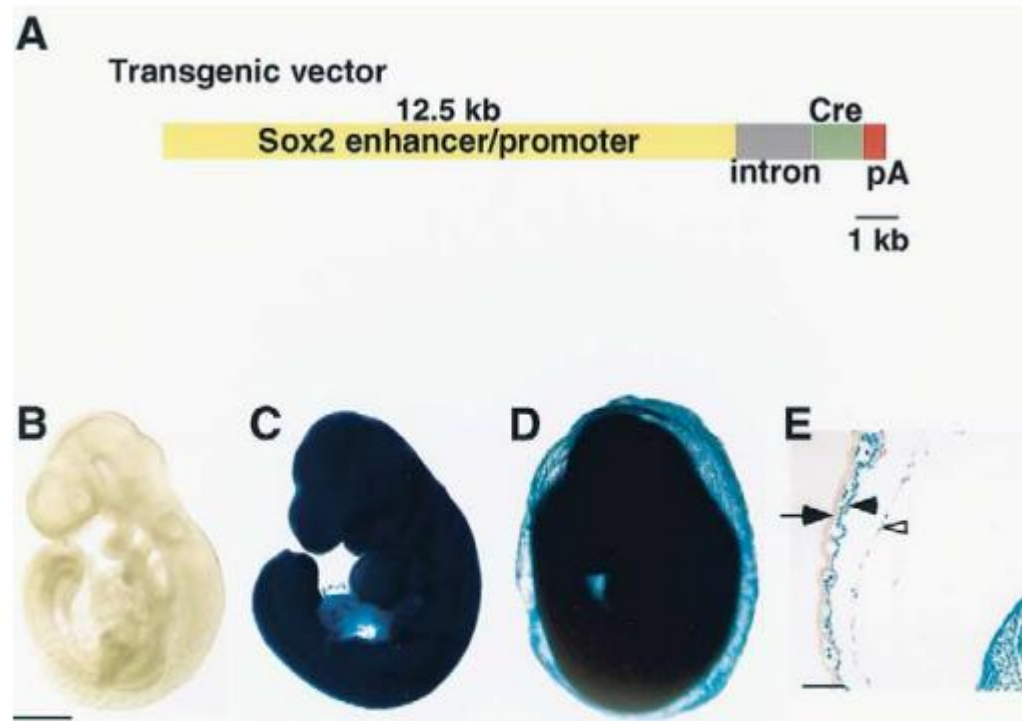


Fig. 1. *Sox2Cre* transgenic mouse induces recombination in epiblast derived tissues. (A) The *Sox2* transgenic construct. The *Cre* gene is driven by 12.5 kb enhancer/promoter of *Sox2*. For stability and efficient gene expression, the *Cre* gene was cloned between the intron from β -actin and the rabbit globin poly(A) adenylation signal. (B–D) Whole-mount X-gal staining of a *R26R* embryo (B), a *Sox2Cre* and *R26R* double transgenic

2.1. Transgenic mouse lines

Sox2Cre transgenics were generated as follows. A 12.5 kb *NotI* fragment of *Sox2* upstream sequence (Zappone et al., 2000) was cloned in front of an intron (Niwa et al., 1991), *Cre* (Gu et al., 1993), and a rabbit β -globin poly(A)

1. Shigemi Hayashi, Paula Lewis, Larysa Pevny, Andrew P. McMahon. Efficient gene modulation in mouse epiblast using a *Sox2Cre* transgenic mouse strain . *Mechanisms of Development* 119S (2002) S97–S101.

Mouse *Sox2* Promoter Sequence from Reference^[1] (12.5kb)

[illegible]

Technical routes

- The *Sox2* promoter^[1] is from references, the length is about 12.5kb.
- In this study, the transgenic vector was constructed in vitro, and transgenic fragments containing *Sox2-iCre-polyA* were micro-injected into the fertilized eggs of C57BL/6J mice, and pcr-positive F0 generation (i.e., founder) mice were obtained.

- According to the existing JAX data, cre is expressed in epiblast cells at embryonic day 6.5, with little or no activity in other cells at gastrulation; some activity is also detected in extra embryonic derivatives of the epi-blast, the yolk sac mesoderm and amnion; no activity is detected in primitive endoderm derived tissues, visceral endoderm.
- Transgenic fragments injected into the prokaryotes will be randomly integrated into the mouse genome. Affected by the insertion site and copy number of transgenic fragments, the expression level of transgenic mice may be different.
- The scheme is designed according to the genetic information in the existing database. Due to the complex process of gene transcription and translation, it cannot be predicted completely at the present technology level.

Gene information (NCBI)

Sox2 SRY (sex determining region Y)-box 2 [*Mus musculus* (house mouse)]

Gene ID: 20674, updated on 7-Aug-2018

Summary

Official Symbol	Sox2 provided by MGI
Official Full Name	SRY (sex determining region Y)-box 2 provided by MGI
Primary source	MGI:MGI:98364
See related	Ensembl:ENSMUSG000000074637 Vega:OTTMUSG000000021249
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	lcc; ysb; Sox-2
Summary	This intronless gene encodes a member of the SRY-related HMG-box (SOX) family of transcription factors involved in the regulation of embryonic development and in the determination of cell fate. The product of this gene is required for stem-cell maintenance in the central nervous system, and also regulates gene expression in the stomach. Mutations in a similar gene in human have been associated with optic nerve hypoplasia and with syndromic microphthalmia, a severe form of structural eye malformation. This gene lies within an intron of another gene called SOX2 overlapping transcript (Sox2ot). [provided by RefSeq, Sep 2015]
Orthologs	human all

Genomic context

Location: 3 A3; 3 16.93 cM

Exon count: 1

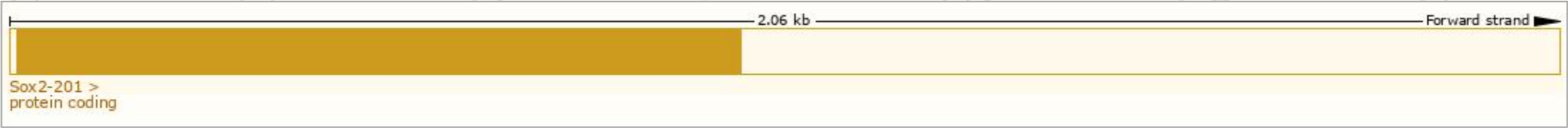
See Sox2 in [Genome Data Viewer](#)

Transcript information (Ensembl)

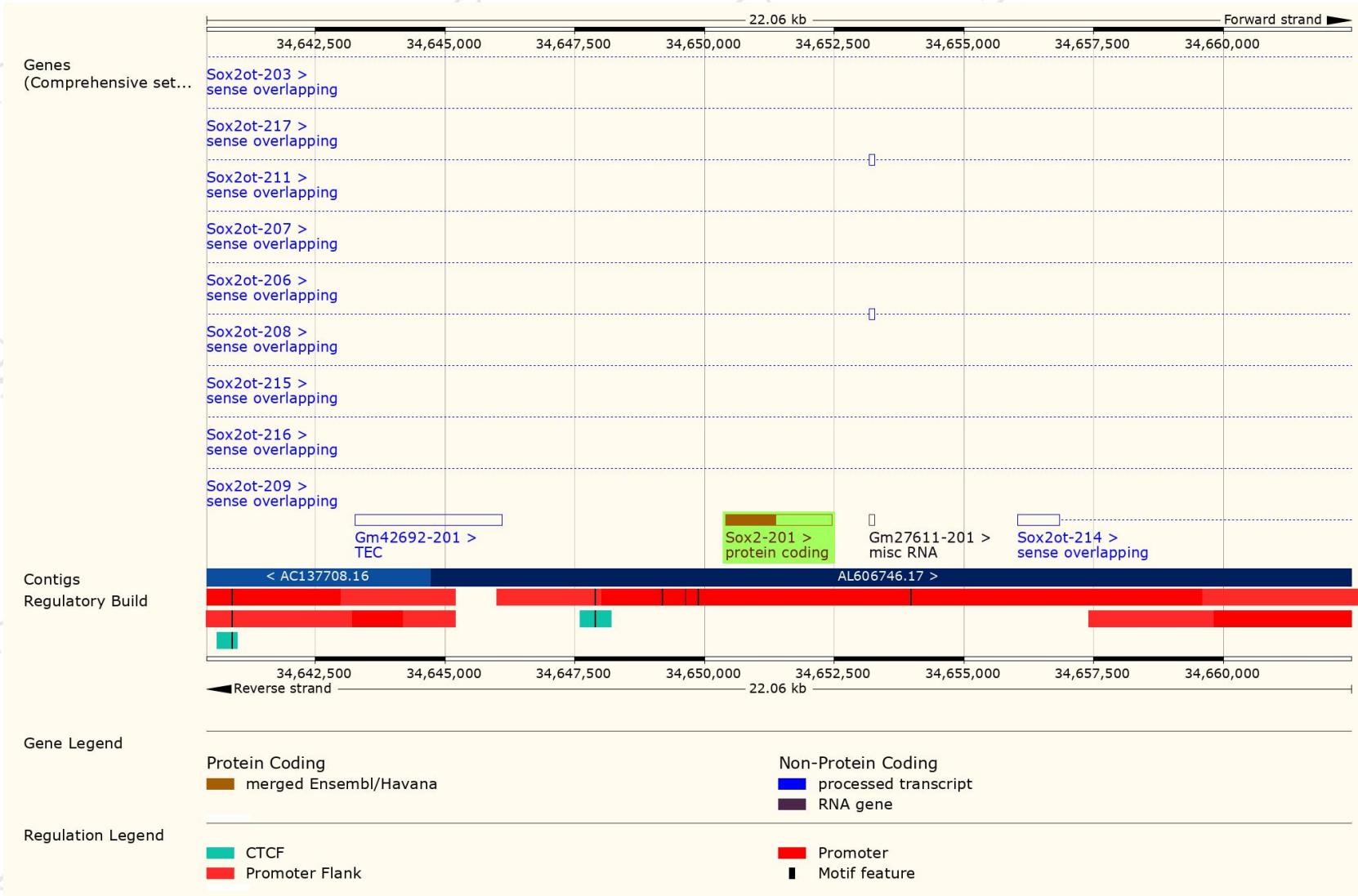
The gene has 1 transcript, and the transcript is shown below :

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Sox2-201	ENSMUST00000099151.5	2057	319aa	Protein coding	CCDS38413	Q60I23	NM_011443 NP_035573	TSL:NA Gencode basic APPRIS P1

The strategy is based on the design of Sox2-201 transcript, The transcription is shown below



Genomic location distribution



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