

# ***Egfr*** Cas9-KO Strategy

**Designer:**

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**Design Date:**

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# Project Overview

**Project Name**

***Egfr***

**Project type**

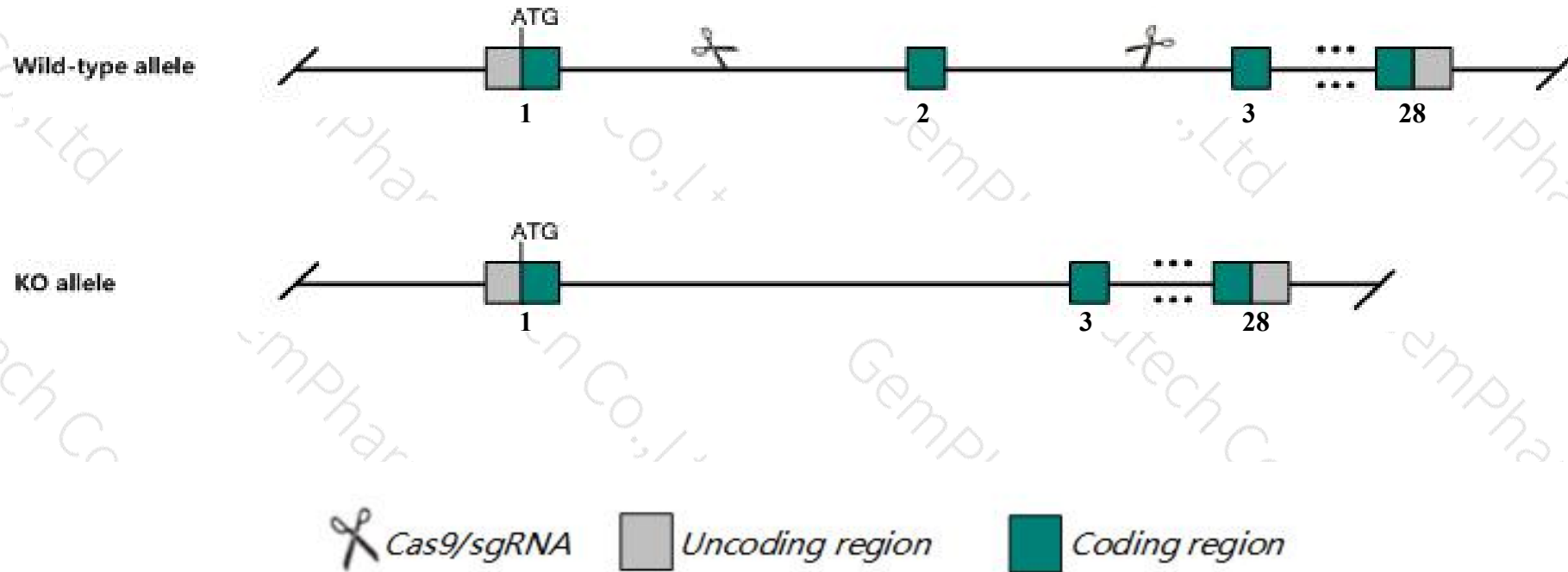
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



- The *Egfr* gene has 5 transcripts. According to the structure of *Egfr* gene, exon2 of *Egfr-201* (ENSMUST00000020329.12) transcript is recommended as the knockout region. The region contains 152bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Egfr* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, Mutations widely affect epithelial development. Null homozygote survival is strain dependent, with defects observed in skin, eye, brain, viscera, palate, tongue and other tissues. Other mutations produce an open eyed, curly whisker phenotype, while a dominant hypermorph yields a thickened epidermis.
- The *Egfr* gene is located on the Chr11. 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)

## Egfr epidermal growth factor receptor [Mus musculus (house mouse)]

Gene ID: 13649, updated on 7-Apr-2019

### Summary

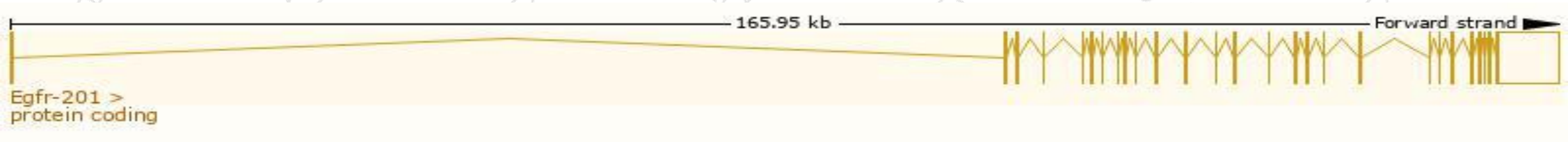
Official Symbol	Egfr provided by <a href="#">MGI</a>
Official Full Name	epidermal growth factor receptor provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:95294</a>
See related	<a href="#">Ensembl:ENSMUSG00000020122</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9030024J15Rik, A1552599, Erbb, Errb1, Errp, Wa5, wa-2, wa2
Expression	Broad expression in liver adult (RPKM 26.7), liver E18 (RPKM 8.7) and 15 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

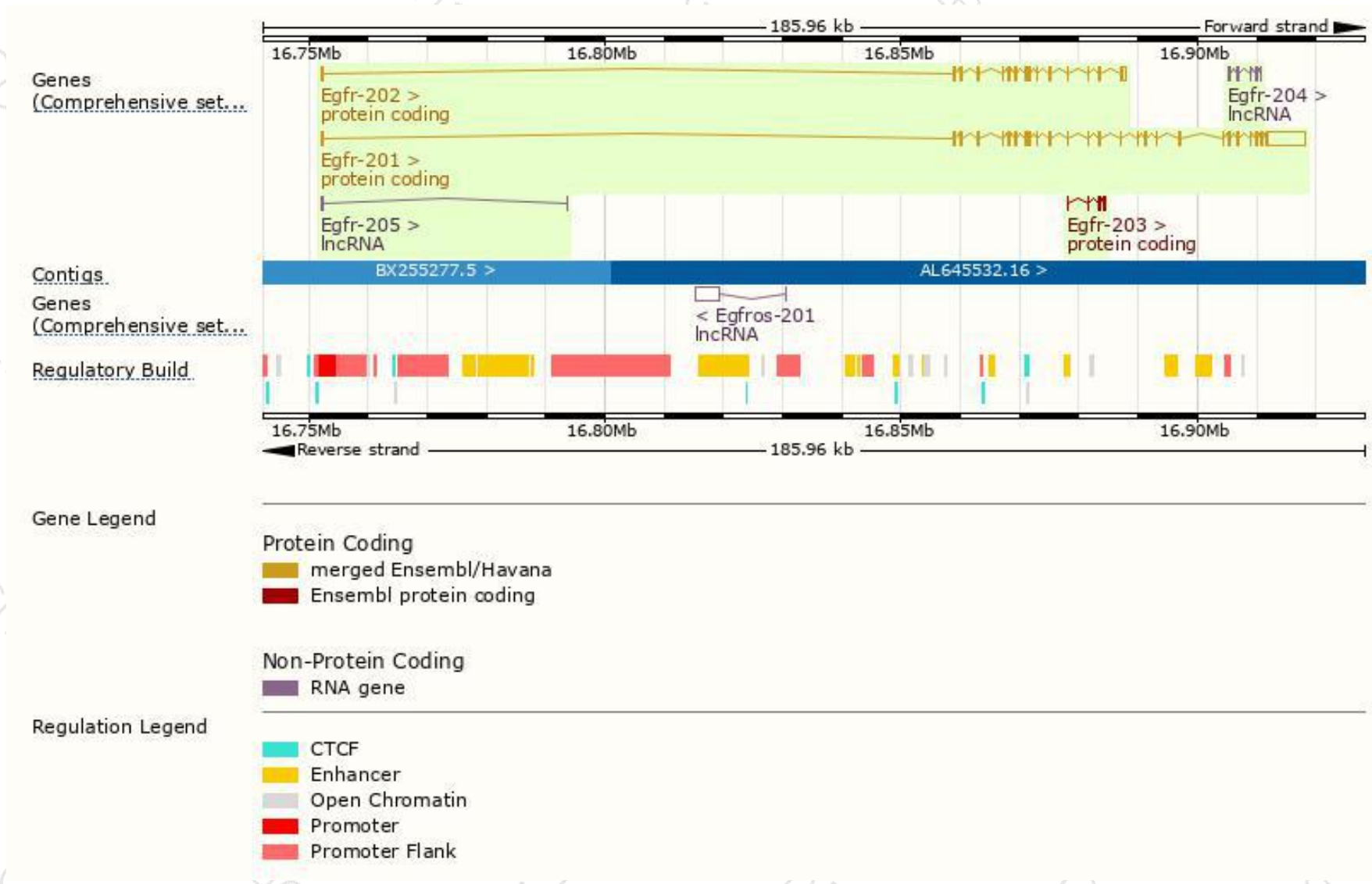
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Egfr-201	<a href="#">ENSMUST00000020329.12</a>	10208	<a href="#">1210aa</a>	Protein coding	<a href="#">CCDS24443</a>	<a href="#">Q01279</a>	TSL:1 GENCODE basic APPRIS P1
Egfr-202	<a href="#">ENSMUST00000102884.9</a>	2943	<a href="#">655aa</a>	Protein coding	<a href="#">CCDS24444</a>	<a href="#">Q9WVF5</a>	TSL:1 GENCODE basic
Egfr-203	<a href="#">ENSMUST00000125984.1</a>	463	<a href="#">136aa</a>	Protein coding	-	<a href="#">Q5SVE7</a>	CDS 5' incomplete TSL:1
Egfr-204	<a href="#">ENSMUST00000138518.1</a>	716	No protein	lncRNA	-	-	TSL:5
Egfr-205	<a href="#">ENSMUST00000139722.1</a>	446	No protein	lncRNA	-	-	TSL:5

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



# Genomic location distribution

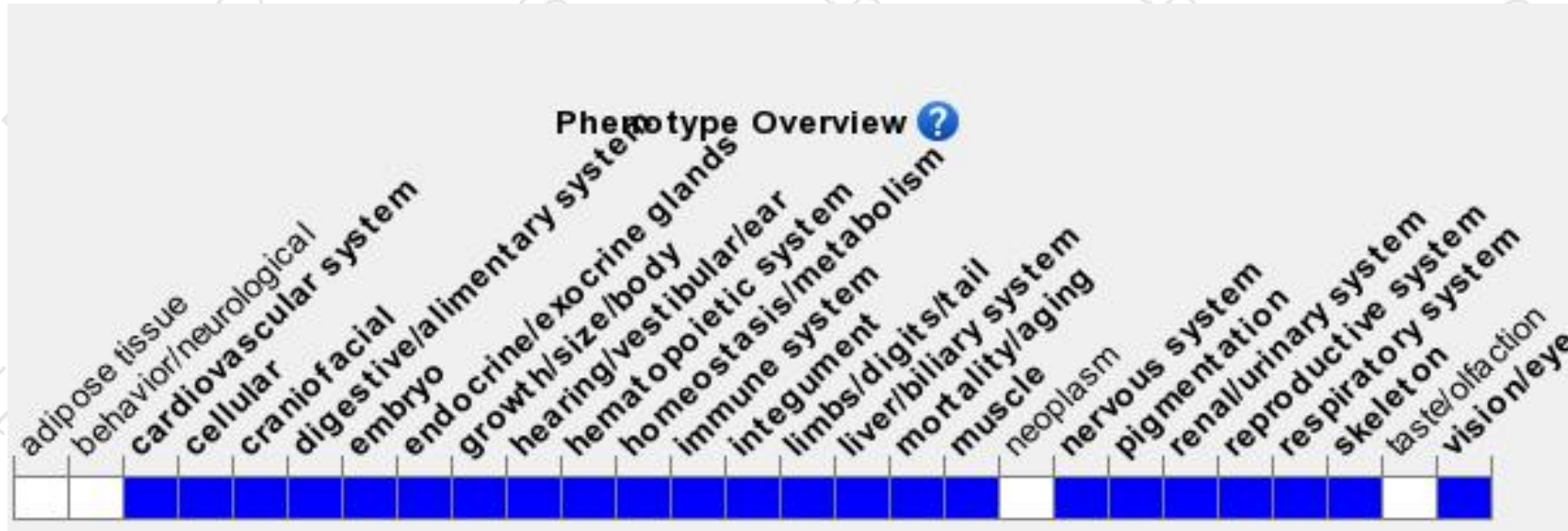




# Protein domain



# 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.

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