Molecular Biology Data
Nr1d2 conditional knock out model

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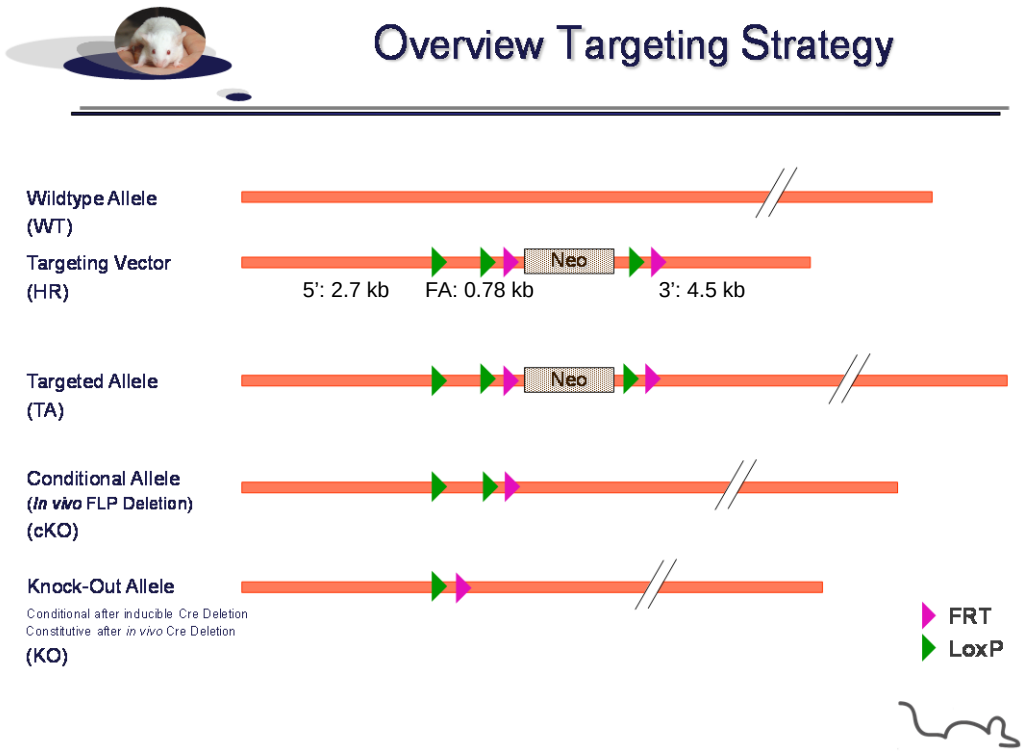
This protocol has been prepared by Claudia Caradec, Engineer
This protocol has been validated by Sylvie Jacquot, Ph.D., Project Manager

1. Schematic representation of the locus

1.1. Overview

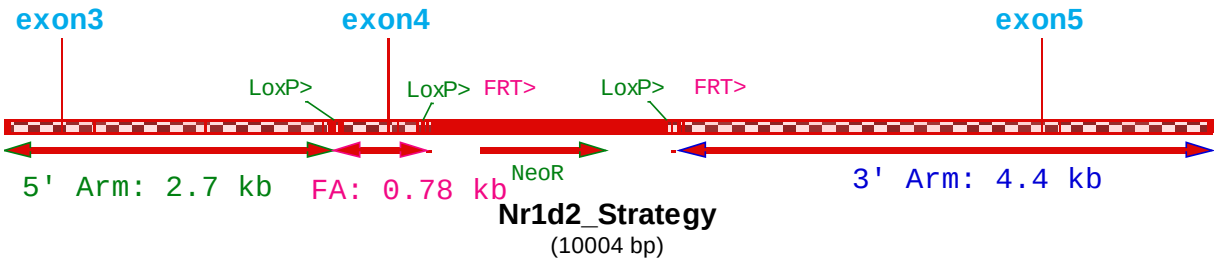


Legend:
5': 5' homology arm; FA: floxed fragment; 3': 3' homology arm
This schematic representation is not on scale

1.2. Strategy chosen: flox of exon 4

Nr1d2 gene (also named RevErb beta) is a member of the nuclear receptor family. Additional information on this gene can be accessed at
http://www.informatics.jax.org/javawi2/servlet/WIFetch?page=markerDetail&key=86572

Strategy used to generate the conditional knock out model



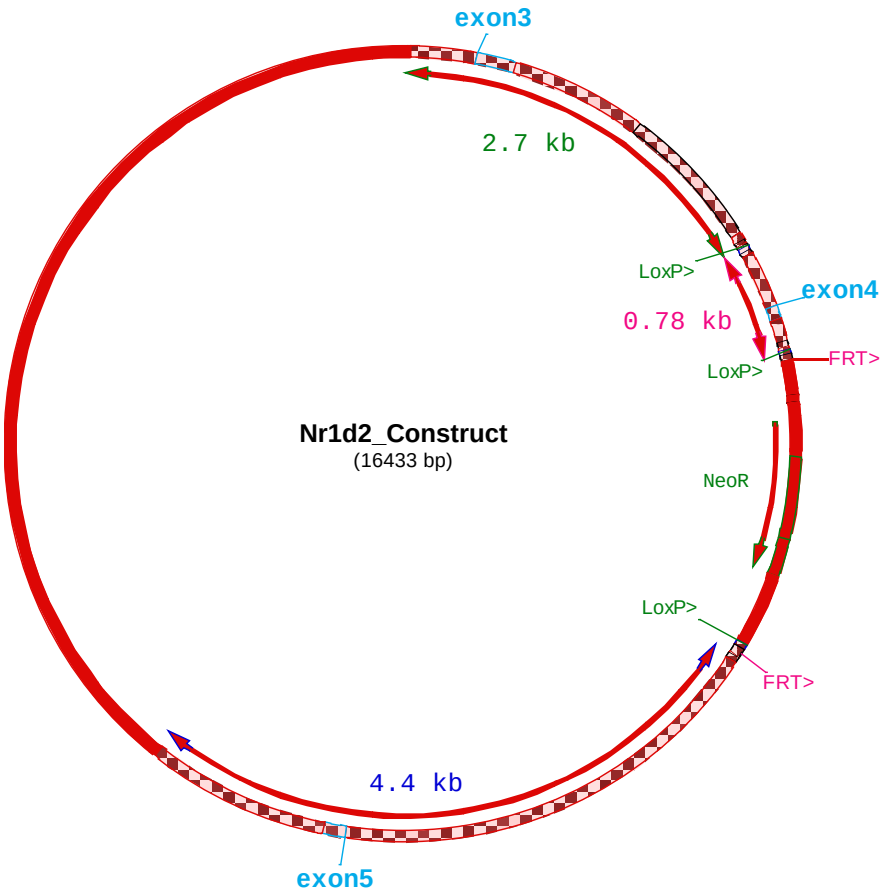
Nr1d2_Strategy
(10004 bp)

2. Construct used for homologous recombination in ES cells: Nr1d2 project

2.1. Legend

loxP sites are indicated in green ; FRT sites are indicated in purple; *Mus musculus* sequences are indicated in uppercase ; exogenous sequences are marked in lowercase.
The targeting vector was generated in 129Sv/Pas and was not fully sequenced.

2.2. Map of targeting vector plasmid



2.3. 5' homology arm (2.7 kb)

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2.5. PGK-Neo region

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2.6. 3’ homology arm (4.5 kb)

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2.7. Vector backbone sequence

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atggcggacgcgatggatatgttctgccaagtcagcgtttaaacttaattaagtcgacggcc

3. ES cell lines targeted and validation data:

3.1. ES cell lines targeted

The targeting vector was electroporated in P1 ES cells [MCI-129Sv/Pas background]

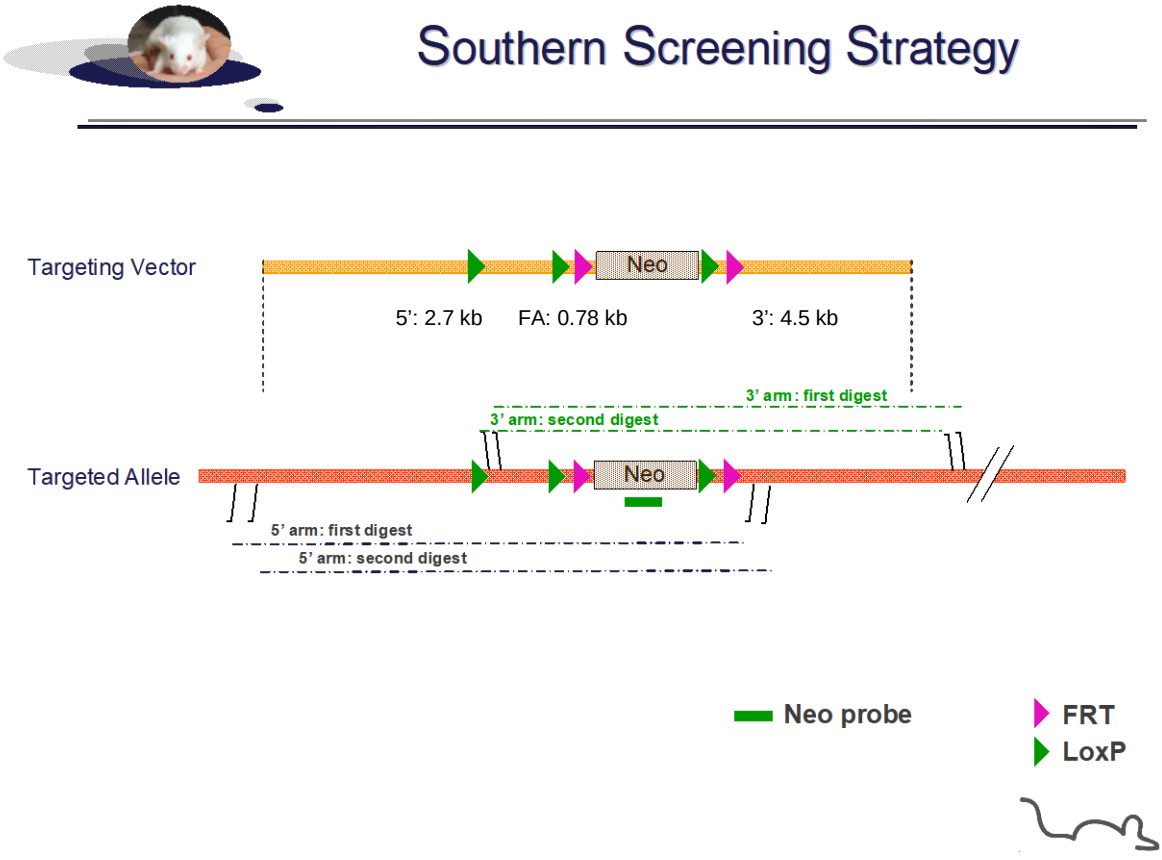
Number of clones screened: ~ 300
Number of positives: 3

Reference of clone used to generate the mouse line:

- clone **DG5-162**

3.2. Southern data on positive clone

3.2.1. Neo Southern strategy



Digestions used to validate the 5' and 3' insertion

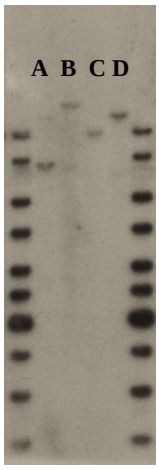
Probe	Name	Genomic DNA digest	WT allele (kb)	Targeted Allele (kb)
Neo	5' arm first digest	AflIII	/	7.3
	5' second digest	NdeI	/	13
	3' arm first digest	DrdI	/	10
	3' arm second digest	ApaI	/	11.8

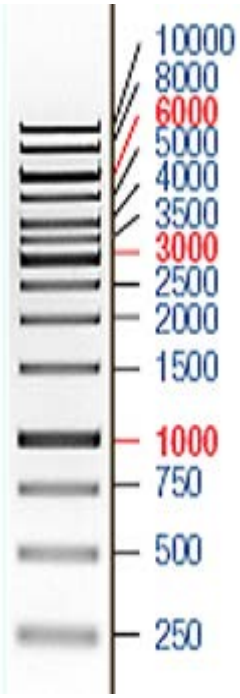
Four different digests are used to validate correct HR event. Two digests validate the 5' insertion, 2 other digests validate the 3' insertion

3.2.2. Picture of Neo Southern

Neo southern blot: 5’ and 3’ arm validation ladder

A: AflIII 7.3kb
B: NdeI 13kb
C: DrdI 10kb
D: ApaI 11.8kb





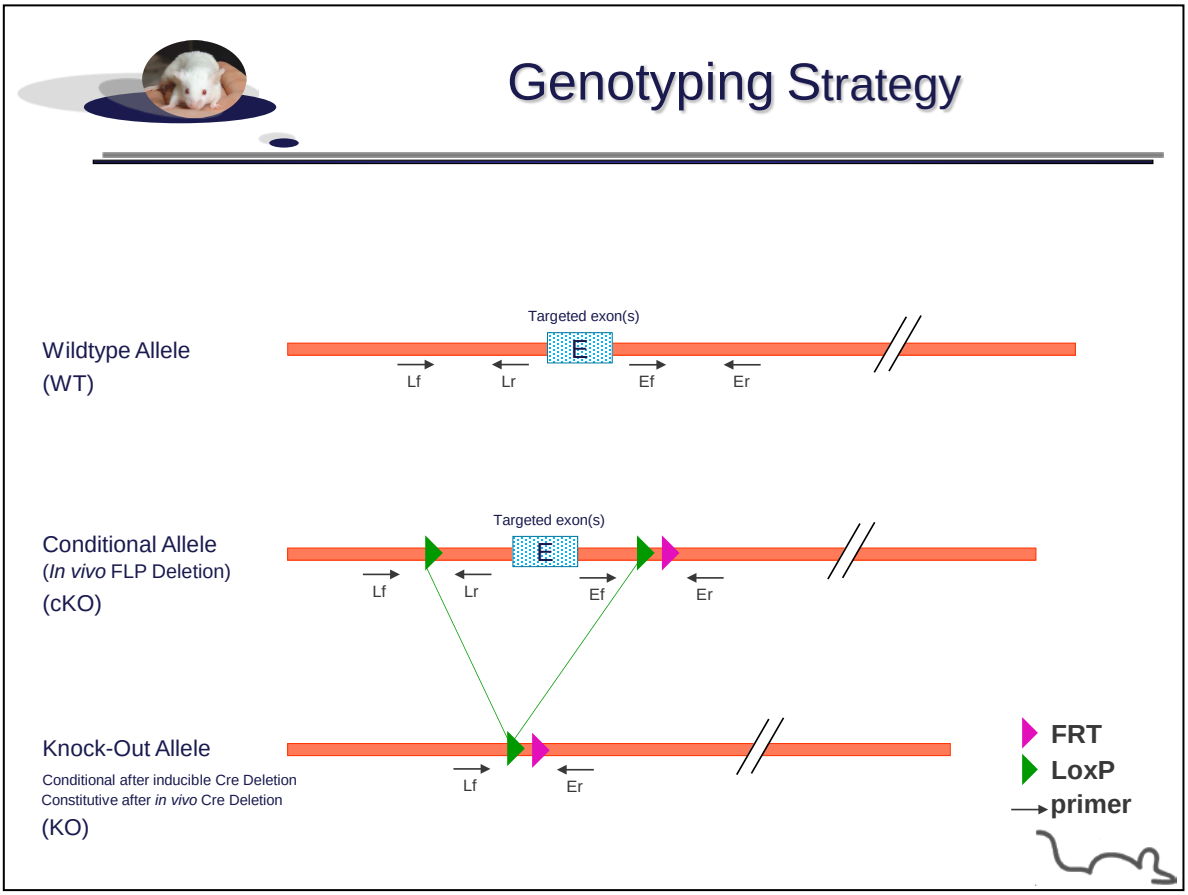
4. Data on conditional and knock-out animals

Both conditional and knock-out mouse models were backcrossed in C57BL/6J background.

4.1. Genotyping protocol and data

4.1.1. Genotyping strategy

The map below describes the position of the primers used for genotyping for each possible allele.



Sequence of primers used for genotyping

Primers	Sequence
Lf	TCATCGCTCCAGTCTCCTACATTTC
Lr	ACCAGGCAAGTGCACCAAACTGC
Ef	GGTTAGGTTTGTGAGTGTCCACAGC
Er	GGAAGTGCTCCAACAAGGTAGTGCA

PCR fragments expected size (bp):

Region analyzed	**Primers used**	Position on the primer (see the map above)	Conditional allele (L2)	Knock-Out allele (L-)	WT allele (WT)
Presence of the distal 5'LoxP	24-25	Lf / Lr	489	---	431
Excision of the selection marker	26-27	Ef / Er	376	---	237
Total Excision (Excision of the floxed exon(s), i.e. knock out)	24-27	Lf / Er	1182	443	983

* This PCR product will not be observed using our PCR genotyping conditions (see description below)
--- No Amplicon should be obtained

4.1.2. PCR protocol

This section describes the composition of the mix and cycling conditions used for genotyping.

Reagents:	Volume:
-10x Buffer (Roche)	2.5µl
-dNTPs 10mM (Amersham Biosciences)	0.5µl
-Taq DNA Polymerase (Roche)	0.2µl
-DNA (50ng/µl)	3µl
-5' primer (100 µM)	0.125µl
-3' primer (100 µM)	0.125µl
-Sterile H2O	up to 25 µl

Cycling conditions:

Temp	Time	#Cycles
94°C	3min	1
94°C	1min	
62°C	1min	2
72°C	1min	
94°C	30s	
62°C	30s	30
72°C	30s	
72°C	3min	1
4°C	∞	

NB: These PCR conditions have been optimized for high-throughput genotyping. Adaptation to small-scale may be required.

4.1.3. Picture of genotyping with various alleles

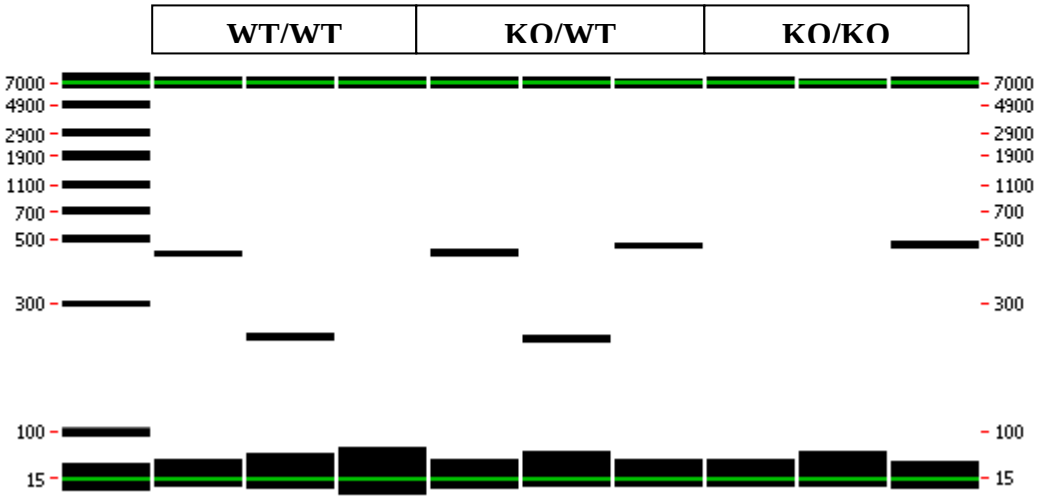
- Picture of genotyping with conditional knock-out (cKO) allele

Data not shown.

- Picture of genotyping with knock-out (KO) allele

Analysis of PCR products pattern was not done by gel electrophoresis but using LabChip® 90 microfluidic apparatus. PCR products were run on the HT DNA 5K LabChip® 90 Assay Kit.

Representative genotyping picture



Note that as this technology is more sensitive than gel analysis, non specific signals and/or primer dimers may be visible on the picture.