

Supplementary Table 4. Sequences of primers used in this study. loxP sites are highlighted in blue and spacers highlighted in grey. sgRNA target site sequences are highlighted in yellow, with the additional G added for T7 transcription shown in bold red. In HDR primers, the loxP site is highlighted in aqua and the spacer sequence is highlighted in grey.

Primer	Sequence 5' to 3'
universal primers for sgRNA synthesis (from Burg <i>et al.</i> , 2016)	
sgT7	GCTAGCTAATACGACTCACT
sgRNA-R	AAAAGCACCGACTCGGTG
M13F	GTAAAACGACGGCCAGT
gene specific primers for sgRNA synthesis	
<i>tbx20</i> sgRNA9	CGCTAGCTAATACGACTCACTATA gttgcatgctatggccccac GTTTTAGAGCTAGAAATAG
<i>tbx20</i> sgRNA10	CGCTAGCTAATACGACTCACTATA gttgtcacccaacgttaata GTTTTAGAGCTAGAAATAG
<i>flr</i> sgRNA3 (gBlock, IDT)	ccGCTAGCTAATACGACTCACTATA gggttcataagaagagtctg GTTTTAGAGCTAGAAATAGCAAGTTAAAATAAGGCTAGTCCGTTA TCAACTTGAAAAAGTGGCACCGAGTCGGTGCCTTT
<i>aldh1a2</i> sgRNA1	CGCTAGCTAATACGACTCACTATA gatgtgggctgaagctcag GTTTTAGAGCTAGAAATAG
<i>aldh1a2</i> sgRNA2	CGCTAGCTAATACGACTCACTATA gtaggggtagaatgctggtg GTTTTAGAGCTAGAAATAG
<i>aldh1a2</i> sgRNA3	CGCTAGCTAATACGACTCACTATA ggtgagataacagacacct GTTTTAGAGCTAGAAATAG
<i>aldh1a2</i> sgRNA4	CGCTAGCTAATACGACTCACTATA gacgtgcgcttggttgggt GTTTTAGAGCTAGAAATAG
<i>pcf21</i> sgRNA5	CGCTAGCTAATACGACTCACTATA ggacgtggagatgaagcaac GTTTTAGAGCTAGAAATAG
<i>pcf21</i> sgRNA6	CGCTAGCTAATACGACTCACTATA ggtggagaaaaggacttcttg GTTTTAGAGCTAGAAATAG
gene specific loxP HDR oligos	
<i>tbx20</i> sg10-loxP-F1	GGTTGTTGTCACCCAACGTTAgga ataacttcgtatagcatacat tatacgaagttattgc ATATGGACAAATATGGATAAA
<i>tbx20</i> sg9-loxP-103	CAATAACCATGATTATGTGCGCATAAATGTGATGCAGTTTGT AGAAAAAAAAAACCTGTG cacataacttcgtataatgtatgctata cgaagttattcc GGGCCATAGCATGCAAAT
<i>flr</i> up3-loxP-HDR3	AGAAGTTGCATTTAAATCAAATGCATAAACGAATCCTCGAAGGCC ACAG ctgataacttcgtatagcatacattatacgaagttattgtA CTCTTCTTATGAACCTGTTT
<i>aldh1a2</i> sg1loxP-hdrL	TCGTCCCCTGCTCTTTGACTGGACAACCAGCAGCATTATCAGaCC CCTG cagataacttcgtataatgtatgctatacgaagttattcaA GCTTCAGCCCACATCTTAAA
<i>pcf21</i> sg5loxP-HDR1	GTTATGCTCATCCTCAGCTCGCGCATGACACGTTTCCACATAGCC AGTT cgaataacttcgtataatgtatgctatacgaagttattgaaG

	CTTCATCTCCACGTCCAGTC
Tol2 (gene trap) – specific (from Balciuniene <i>et al.</i> , 2013)	
Tol2-F8	CTCAAGTAAGATTCATAGCCAGATAC
Tol2-R7	CTGGCTAGAATCTTACTTGAGTAA
loxP – specific	
loxP-U1	TATAATGTATGCTATACGAAGTTAT
loxP-U2	TATAGCATAACATTATACGAAGTTAT
loxP-F1	TCGTATAATGTATGCTATACGAAGT
loxP-R1	ATAACTTCGTATAGCATAACATTATA
loxP-Rev	CGTATAATGTATGCTATACG
tbx20 – specific	
tbx20in1-F1	CAGTAGCCTAATATTTCAACGTTTC
tbx20in1-F2	GTTTCTATGGCCTATGTTATTGTGA
tbx20in1-F4	TGTAAAGACTGATGTAGTATGTAGT
tbx20in2-R1	GTGTTGACAGAAATAGGTTACACTC
tbx20in2-R2	GTAAGCTTGTGAGATTGTGTTGGAC
tbx20ex2-F1	AAATGATTATTACAAAGTCTGGAAG
tbx20ex2-R1	ACGACTTTTCCACGAATTGTTCTTG
flier – specific	
flrUTR-F1	GCGTCATGTATTGATTACGTCACT
flrEx7-F1	TCATCCTGCACGAGACTGCT
flrEx7-F2	TAATCTGAAAGCAGCTATTGAATAC
flrIn7-R1	TTGCAATGTTTCCACTGACCAA
flrIn7-R2	AACATGAGACAGAGTGATGTTAAG
flrIn7-R4	TAGACTGCACACAGGCAGACTTGAT
aldh1a2 – specific	
aldh1a2-F1	TGCACTGTTAAACAGCGCGTAAGAC
aldh1a2-F2	AAGCTGATCCAAGAAGCAGCAGGAA
aldh1a2-F3	TAACATTAGGCAGGCAGAAGAGTAG
aldh1a2-F4	TGACAGCGTCGAGCATCCTACACAA
aldh1a2-F5	GTTGTAATCGCACATCGGCA
aldh1a2-R1	CTCCAGCGTGACTCTCTTCAGATT
aldh1a2-R4	AGTTTTGGAGCCATTGAATTCTGCT
aldh1a2-R6	AGCAGGCAGATTTACGGTTCTAGTG
aldh1a2-R7	CGGTGAGGGCATCAGATGGA
tcf21 – specific	
tcf21-F1	ACAAGTTATGCTCATCCTCAGCTCG
tcf21-F9	CTGCTAGCAACAGCATATCCATC
tcf21-F10	GACAAAACGCTCGAGTGCAATGAAT
tcf21UTR-F1	CTCCACGTCCAGTCAGAGAACCTC

tcf21-R1	CATATTTGTCATTGGCGAGTATCTG
tcf21-R5	GCTTTGCTGAGCACGCGCATCCT
tcf21UTR-R2	AACAAAGGCGCGTGACATGA
<i>tbx18</i> – specific	
tbx18UTR-F1	CGTTGACAGACCGATGAGACTGTT
tbx18-R10	TGGAGTGCAGAATGATATGGCC