

SUPPLEMENTARY ONLINE DATA

Reprogramming of pancreatic exocrine cells towards a beta cell character using *Pdx1*, *Ngn3* and *MafA*

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***Pdx1*:**

AGAGATCAGCCTGCTGAGAGAGAA AATTGAAA(CAAGTGCAGGTG)TTCGCGGGGCCTGGGC
 CTCC(TTCTTAAGG)CAGGGCCAGG(CCAAT)GGTGGCCCCAGGCTGAA(CCACGTG)GGGTGC
 CTCAGAGCCTATGGCACGGCGACCGGCTTCTGTCTCTCGCCAGCCTGTGGTTCGCCGGGA
 (GAGCA)GTGGAGAAGTGTCAAAGCGATCTGGGGTGGCGCTGAGAGTCCGTGAGCTGCCAG
 CGCCTAAGGCCTGGCTGTAGCTCCCTACCCGGGCTGCCGGCCCCGAAGTGCCCGGTGCC
 ACCATGAATAGTGAGGAGCAGTA CTACGCGGCCACACAGCTCTACAAGGACCCGTGCGCAT
 TCCAGAGGGGTCCGGTGCCAGAGTTCAGTGTAATCCCCCTGCGTGCCTGTACATGGGCCG
 CCAGCCCCACCTCCGCCGCCACCCAGTTTGCAGGCTCGCTGGGAAACGCTGGAACAGGGA
 AGTCCCCGGACATCTCCCATA CGAAGTGCCCCCGCTCGCCGATGACCCGGCTGGCGCG
 ACCTCCACCACCTCCAGCTCAGCTCGGGCTCGCCATCCACCTCCCGGACCTTCCCG
 AATGGAACCGAGACTGGGGCCTGGAAGAGCCAGCCGCGTTTATCTCCCTTCCCGTGA
 TGAAATCCACAAAGCTCACGCGTGAAAAGCCAGTGGGCAG

***Ins1*:**

AATAATC(TAATTA)CCCTAGGTCTAAGTAGAGTTGT(TGACGT(C)CAAT)GAGCGCTTTCTGC
 AGACTTAGCACTAGGCAAGTGT(TGAAAT)(TACAGCTTACGCC)CCTCTCG(CATCTG)CC
 TACTACCCCTCTAGAGCCC(TTAAT)GGGCCAA(ACGGCAAAGTCC)AGGGGGCAGAGAGG
 AGGTGCTTTGGAC(TATAA)AGCTAGTGGAGACCCAGTAACTCCCAACCCTAAGTGACCAGCT
 ACAATCATAGACCATCAGCAAGCAGGTATGTA CTCTCTGGGTGAGCCCGTTCCCCAGCC
 AAAACTCTAGGGACTTTAGGAAGGATGTGGGTCTCTCTTACATGGACCTTTCTCTAGCC
 AACCTGCTATCTCCAGGTCATTGTTC AACATGGCCCTGTGGATGCGCTTCCCTGCCCTC
 CTGGCCCTGCTCGTCTCTGGGAGCCCAAGCCTGCCAGGCTTTTGTCAAACAGCACCTTTG
 TGGTCTCACCTGGTGGAGGCTCTGTACCTGGTGTGTGGGAAACGTTGGTTCTTCTACACAC
 CCAAGTCCCGTCTGTAAGTGGAGGACCCGCAAGTGCCACAACCTGGAGCTGGGTGGAGGCC
 CGGAGGCCGGGGATCTTACAGCCTTGGCACTGGAGGTTGCCCGGCAAGCGTGGCATTGT
 GGATCAGTCTGCACCAGCATCTGTCCCTTACCAACTGGAGA ACTACTGCAACTGA

***Ins2*:**

AGCAAGGCCCTCTGGCTTCTCTATGGTCTGAGGAGACCTCTCCACACTGCCCTGGTCTTCCC
 ACCCTGGTCTACCTGAGCTCCTTACCTGCTCCTCTTGCATTACGATCTTCTGCTACAG
 TAGGTCCACGGTGGTGTCCAGATACCCGGAGTGTGAGTGGCTGCAGCACTTTCTGGGGGA
 CAAGAAGTAGGGAGCAAGGGGCTCACAGTCAAGTCTGGTGGCTATAAAGCCCTGCATAGG
 GTAGAGTTCTCGCTCATGCAACGACACCAAGGGTTTTGCTGTCTGCTCGGGGAACAGGGC
 AGTACCAAATCAGGAACAGAAAGAGTCAAGGATCCCCAACCCTCAAGTGGAGGCTGAG
 AAAGTTTTGTAGCTGGGTAGAGTATGTA ACTAAGAGATGGAGACAGCTGGCTCTGAGCTCTG
 AAGCAAGCACCTTATGGAGAGTTGTGACCTTCAGGTGCAAACTAAGATACTACAGGAG
 AATACACCATGGGGCTTACGCCAGTTGACTCCCGAGTGGGCTATGGGTTTGTGGAAGGAG
 AGATAGAAGAGAAGGGACCTTTCTTGAATTCTGCTTTCCCTTCTACCTCTGAGGGTGAAGT
 GGGGTCTCAGCTGAGGTGAGGACACAGCTATCAGTGGGAACTGTGAAAACAACAGTTCAAGG
 GACAAAGTACTAGTCCCAACAACCTGCAGCCTCTGGGGAATGATGTGGA AAAATGCT
 CAGCAAGGACAAAGAAGGCCTCACCTCTCTGAGACAATGTCCCTGCTGTGAAGTGGTTC
 ATCAGGCAACCCAGGAGCCCTATTAAGACT(TAATTA)CCCTAAGGCTAAGTAGAGTTGT
 TGTGT(C)AAT)GAGCACTTCTGCAGACCTAGC ACCAGGCAAGTGT(TGGAAA)(TGCAG
 CTTCAGCC)CCTCTGGC(CATCTG)CTGATCCACCC(TTAAT)GGGACAAACAGCAAAGTCCAG
 GGGTCAGGGGGGGGGTGC)TTGGAC(TATAAA)GCTAGTGGGGATTGAGTAACCCAGGCC
 TAAGTGACCAGCTACAGTCGGAAACCATCAGCAAGCAGGTATGTA CTCTCCAGGGTGGGCC
 TGGCTTCCCAGTCAAGACTCCAGGGATTTGAGGGACGCTGTGGGCTCTTCTTACATGTA
 CCTTTGCTAGCCTCAACCCTGACTATCTCCAGGTCATTGTTCCAACATGGCCCTGTGGATC
 CGCTTCTGCCCTGCTGGCCCTGCTCATCTCTGGGAGCCCCGCCCTGCCAGGCTTTTGTG
 AAACAGCACCTTTGTGGTTCTCACTTGGTGGAAAGCTCTTACCTGGTGTGTGGGGAGCGTGG
 ATTCTTCTACACACCCATGTCCCGCCGGAAGTGGAGGACCCACAAG

Figure S1 Location of the primer pairs used for ChIP, and CpGs sequenced for methylation analysis, in the genomic sequences of *Pdx1*, *Ins1* and *Ins2*

Black, proximal promoter; blue, 5' untranslated region; red, first exon. The sequences in parentheses indicate known regulatory elements. Primers for ChIP qPCR are highlighted in yellow. CGs shown in bold type were sequenced in the DNA methylation assay.

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Table S1 Primer pairs used in RT-PCR, ChIP qPCR, DNA methylation analysis and qRT-PCR

Primer name	Forward sequence (5'–3')	Reverse sequence (5'–3')
Primers used in RT-PCR		
Ins1	CTACAATCATAGACCATCAGCA	CAGTTGGTAGAGGGAGCAGAT
Ins2	CCCTGTGGATCCGCTTCCTGC	GTGCCAAGGTCTGAAGGTCA
Gcg	GCTGGCAGCATGCCCTCAA	CCTTTGCTGCCTGGCCCTCC
Ppy	CTATCCACTTGGGTGGCTCT	ATCAAACCCACCAGAAAGGC
Sst	CCCAGACTCCGTCAGTTTCT	GAAGTTCTGCAGCCAGCTT
lapp	GGCTGTAGTTCCTGAAGCTT	AAGGTTGTTGCTGGAGCGAA
Pax4	TGGAGAAAGAGTTCAGCGT	CTTGGGATGTGGTGTCACTG
Neurod1	TTTCAAACACGAACCATCCA	CCTGTTTCTCCAAAGGCAG
Nkx2.2	CACGGCTCAAAGCCAGGA	GGAGAGAGCGGTGGGGCAGA
Arx	AGGACGCCGAGGGCAAGGAT	TCTCCCGCTTGCACCCTTG
Pdx1	GTAGTAGCGGGACAACGAGC	CAGTTGGGAGCCTGATTCTC
Ngn3	AAACTTCGAAGCGAGCAGAG	CATCCTGAGGTTGGGAAAA
MafA	TCCAGGCTGGTGCAGAAAG	GCAAGCCCACTCAGGAGCCG
Isl1	TGATCGCGCCCGCTCTAAG	TGACTCGGGGACTGAGGCGG
Hlxb9	CCTGTGCGACCCAAAGCGTT	CCCAGCAGCTCCTCCTCCGT
Pax6	GGCCGTGCGACATTTCCCGA	GCCGTCTGCGCCATCTGTT
Hes1	GGCCACCTGGCCAACTGCAT	GCTGGAAGGCGCACTGCG
Glut2	GCCATCTTCTCTCTCGTCAAG	ACCTGGTTCCTTCTGGTCT
Kir6.2	CTGGAAGGAAGCCAGTCTTG	CAGTGTCCCCAGACAAAGT
Sur1	AGCTGCGCTTCTGCCTCACG	GGCACCCCTGCTGGCTCTGTG
Amylase	GCCTACTGACAGAGCCCTTG	TGGTCCAATCCAGTCAATCA
Ptf1a	CCTCTCCAAGGTAGACACGC	CCTGGGATGTGGTGTCACTG
Cbe	GACCGCGGTACAGCTCGCG	CTGCGCCCCACCGTGTAGAT
Pcsk2	ACACAGCTCCGCCAATTCGCA	TGAGATCCACAACCCCTCCA
Prss1	GTGTATCTCCAACGATCTTGT	CACCTTGATCCTAGCCCTTG
Cpa1	CCAGAAGTCCAACCTGCAAGT	CAGTCTGTGGCAATGAGAAT
Ctrb1	GAATAGCATCTCTCCGTTGAC	GTCCTGCTTTGCCCTTGT
Rbpjl	CATCTCCGAACACACCTTG	CTCCAGTGCCTCATATCAGC
Beta Actin	TCCGTAAGACCTCTATGCC	GGAGGGGCGGACTCATCGT
mNgn3	CCGGATGACGCCAAACTTACA	ACACCAGTGTCTCCGGGAG
mPdx1	CCGGACATCTCCCATACGAAGT	CGCACAACTTGTCTCCGGCTCT
mMafA	ATCATCACTCTGCCCAACAT	AGTCGGATGACCTCCTCCTT
Primers used in ChIP qPCR		
Ins1	CCAATGAGCGCTTTCGCACTT	AGGAGAGTACATACCTGCTGCTG
Ins2	ACCAGGCAAGTGTGGAACTGC	ATGTAAGAGAAGAGCCACAGCGT
Pdx1	AGAGATCAGCTGCTGAGAGAGAA	TACTGCTCCTCACTATTCATGGTGGC
Gapdh	CTTTACGGGTGCACGTAGCTCA	TTTCACTGGCACTGCACAAGAAG
Primers used in DNA methylation assay		
Ins1 1st set	TTTTAGGTTAAGTAGAGTTGTTGA	CCCTAAAATTTAACTAAAAAAC
Ins1 2nd set	GTTTTTGTTTTTGTGGTTTTGTT	CACCCAACTCCAATTATAACACTTAC
Ins1 3rd set	TTTTTGGGAGTTAAGTTTGTGTTAG	ATACAACACTAATCCAAATACCAC
Ins2 1st set	TTTGAGTTTTTATTGTTTTTTTT	CTAATTAATACTACCCTATTCCCC
Ins2 2nd set	GATTATAAAGTTAGTGGGATTTAGTAATT	TATTTAAACAAAACCTAAACAAAAC
Ins2 3rd set	GTATTTTTGTGGTTTTTATTGTTG	ACTTACCTTATAAATCCTCCACTTC
Pdx1 1st set	AGGAGAGATTAGTTTGTGAGAGAGAA	AAAAACTACAACAAAACCTTAAAC
Pdx1 2nd set	ATTATGAATAGTGGGAGTAGTATTA	AAAAACTTCCCTATTCCAAC
Pdx1 3rd set	GTTGGAATAGGGAAGTTTTT	ACTTACCTACCCTAACTTTTCCAC
Primers used in qPCR		
Ins1	CAATCATAGACCATCAGCAAGC	AGAAACCACGTTCCCCAC
Ins2	CCCAGGCTTTTGTCAAACAG	GTGCCAAGGTCTGAAGGTC
lapp	CCACTGAAAGGGATCTTGAGAC	TTCCGTTGTCCACCCTGAG
Pax4	GGGCAGTATCCAGATTCAGTTG	GGCATCTGTGTTCCCATTTT
Neurod1	ATGTCTTCCACGTCAAGCC	GAGAAGTTGCCAATGATGCTG
Nkx2.2	GGTCAAGACTCTGTTCCAAAAC	GTCACCTCCATACCTTTCTCAG
Arx	AATCTAACCCATCCCAACAC	CTCTTCTGGTACTGATTGCTC
Endogenous Pdx1	CCCAGCTTCTGAAAACCTTG	CITTTTATTGCTCAGTTGGG
Endogenous Ngn3	TCCAGACGCAATTTACTCCAG	CTAGTTCTCCGGGCTCAAAG
Endogenous MafA	TCTTTCTGTGAGCGCGG	TCAGAGTCCGAACCGAGG
Isl1	TTGTTAGGGACGGGAAAACC	CTACACAGCGGAAACATTCG
Hlxb9	GCTTTCCTACTCGTATCCTCAG	TTCCCAAGAGTTTCGATTG
Hes1	AGAAAAATCCTCGTCCCG	TTTCATTTATTCTGCGCGG
Glut2	CACATCCTACTTGGCCTATCTG	TCAGTGGCCCTTAGTCTTTT
Kir6.2	TCAGTAAGCAATGAGCAGGG	CAACCTCTGGACTGATATGCC
Sur1	AGAAGCTCCTAGAGTACACCG	TGTAGGGAGTTGGAGATGGAG
Amylase	GCAGACTTTCATTTTCCAAGAG	ACAAAACCCCAACCTTCTCC
Ptf1a	AGGACCCAGAAAACCTCAAC	CAATATGCACAAGACACAGCC
Cbe	ATGTAATGAGCGGTTGG	AGGGCATGATATGATCTGTT

Table S1 Continued

Primer name	Forward sequence (5'–3')	Reverse sequence (5'–3')
Pcsk1	CTCAGCCCTTCCTACTTGTG	CATTGACAACTGCCTCTTCG
Pcsk2	GCATAAAGACGGAGAGGAAGAG	TGGTAAAAGTGGTACAGGCC
Prss1	GTGTATCCTCCAACGATCTTGT	CACCTTGATCCTAGCCCTTG
Cpa1	CCAGAAGTCCAAGTCAAGT	CAGTCTGTGGCAATGAGAAGT
Cpb1	CACGTTGCTTATCAGTACCTCA	GCCTCTCACTACAGTTGACTT
Ptrb1	GAATAGCATCCTCTCCGTTGAC	GTCCTGCTTTGCCCTTGT
Rbpjl	CATCTCCGAACCACACCTTG	CTCCAGTGCCTCATATCAGC
Gapdh	TCCAGTATGACTCTACCCACG	CACGACATACTCAGCACCAG

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