Supplementary Materials for

Modulation of DNA methylation influences cartilage formation in murine chondrogenic models

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This PDF file includes:

- Sequences of primer pairs used for the PCR assay analyses.
- Sequences of primer pairs used for the RT-qPCR reactions.
- Sequence data of the 3'UTR regions of *Dnmt3a*, *Ogt* and *Tet1* genes with insert flanking T7 promoters for antisense probe preparation. These regions were cloned into pDrive vector and later amplified for digoxigenin-labelled RNA probe preparation.

Epig.Modif.	Gene	Forward	Reverse
DNA methylation	**Dnmt1**	CAGAGGAGAGAGACCAGGATAA	GCTGTTACCTCTTCCAGTTTCT
	Dnmt3a	CAAGGGACTTTATGAGGGTACTG	TTCTCAAAGAGCCAGAAGAAGG
	Dnmt3b	GAACCCTGGAGCTGCTATATG	CAACTTGGGTGGCTCAAATTC
	Tet1	CCAAGTGGGTGATCAGAAGAA	CACAGCAGGATAAGGACAACTA
	Tet2	AGGATGCAATCCAGACAAAGA	GCTTTACCCTTCTCTCCATACC
	Tet3	GAACTCATGGAGGATCGGTATG	CAGTGTGTGTCTTCGGATCA
	Ogt	GACTGGCGACTACACAGATTA	GGGAACGGGTGGTTACAATA
Histone acetylation	**Atf2**	ATGGCAGTGGATTGGTTAGG	GAGAAGCCGGAGTTTCTGTAG
	Crebbp	CAACAAACCATCCTGGGATCT	GGGTCTATGGGATTTGGGTTAC
	Ep300	GGCAATGCTGGCAGTTTATT	TTCCCATCTTAAGTGGTTGGG
	Hat1	GCCTGAAGATCTTGCTGTACTA	TCATCTGCCTCCACACAATC
	Kat2a	GCTCTTGGGAATGGTAGTAGATG	GCAAGAGCTTGAAGAGGTAGAA
	Kat2b	GAGGAGACCTCCAGCAGATAAT	TGAGAAACGTGAGCAGCAAG
	Kat5	TTTCCCTCAGAATGGGTCAG	CATCAGTGCCCAAGCAATTAG
	Kat6a	CCCATCTGTAGCTTCTGTCTTG	CACGATGGATGACCGCTATT
	Kat6b	GTGCCGATCCCATTCCAATA	ACAGGATGGGTGTCCACTA
	Kat8	TCTATGTTCACTATGTGGGCTTTA	GCCAGCTCACTCAGGTATTT
Histone deacetylation	**Hdac1**	GATGCAGAGATTCAATGTTGGTG	GATGTCCGTCTGCTGCTTATTA
	Hdac2	CCTCATAAAGCCACTGCTGAA	CCGACGTTAAATCTCTGCATCT
	Hdac3	TGATGACTGCCCAGTGTTTC	GGCCCAGTTGATGGCAATA
	Hdac4	CTTGAGGGCCGCTTTATCA	GGAAAGAAACACAACCAAGTCTATC
	Hdac5	AGGAGGAGCTGGAGAAACA	GATGGCACTCTCTTTGCTCTT
	Hdac6	CCCAATCTAGCGGAGGTAAAG	GTTCAGATCCAGCCCTTGAA
	Hdac7	CAGAAGCTGGCTGAAGTGAT	GCTCAAGAGTTCTGTAGGGAATAC
	Hdac8	CCTTCCACACTGATGCCTATC	GGCAGTCATAACCTAGTCCATATT
	Hdac9	GGAGCACATCAAGGAACTTCTA	GCCTCTCTACTTCCTGTTCTTG
	Hdac10	AGACCCAGACCCTGGATAAA	AAAGGTGTCCGGGTGAAAG
	Hdac11	GAGCTGAAGTGGTCCTTTGT	TCCTCTGCACAAGGAAGTTG
	Sirt1	GGATCCTTCAGTGTCATGGTT	CACCGAGGAACTACCTGATTAAA
	Sirt2	CCAACCATCTGCCACTACTT	CGTGTCTATGTTCTGCGTGTA
	Sirt3	GCCCAATGTCACTCACTACT	GATCCCAGATGCTCTCTCAAG
	Sirt4	CGCTGCTCAAGATCCCTAAG	GGGCAGCTCTCATTTCTGTAA
	Sirt5	GTGTCTAGTGGTGGGAACATC	GGGTGGTCTCCATGTTAAACT
	Sirt6	CCCAAGTGTAAGACGCAGTA	CAGTCCAGAATGGTGTCTCTC
	Sirt7	GTGGTGTCTCAGAACTGTGATG	CAGGAGGTGCAGACTTCAATATAC

Table S1. Sequences of primer pairs used for the PCR assay analyses. The table continues on the next page.

Histone methylation	**Ash1l**	GAGAGAGGAACTTCGTGCTAAA	TGTACAGCGATGCTGAGTG
	Dot1l	CATCACTACGGAGTGGAGAAAG	ACCTCGTTCCAGTGTGTATTC
	Ehmt1	GTCTGACCTGAGTTCTGAATCC	CTGCTCGGCTTCTTTCTACTT
	Ehmt2	ACAACGCACGCCACTAAT	CATCCTCTTCCTTGCTGTAGAC
	Ezh1	GGAGCAAAGGCTCTGTATGT	GGCTGGACACGAAGTTTCT
	Ezh2	CATCCCGTTAAAGACCCTGAA	ACAGTTTCGTCTTCCACCATAA
	Fbxo11	GATGGATTTGCTGCAGGTATTG	GCCTCCAAATCGGTTGTTAAAG
	Kmt2a	CCAGACCCTCCTGTTCTTACT	CGCTGAACTCCAACACAGATAC
	Kmt2b	GCTGGACTGGAAAGCAGAA	CTAGGTCGCAATCCTCCTTAAA
	Kmt2c	TGTTAAGGCCTCACACCTTG	GGAGTGGACAAACTGCTTACT
	Kmt2d	GAGACATGTGACAAAGGGTATCA	CATAGCCGGCATGTCTTACA
	Kmt2e	AGCCCAGGAGTTTGGATAAAG	AGGAACTTCATCACCACTTTCA
	Prdm4	GACACACCAATAGAGAGCAGAG	ATGGAAGGACACCAACAACA
	Prmt3	AGACTTAAGAATCCTACGGTTGAA	GGAGTAGACACAGGCTCATAAAG
	Prmt4 (Carm1)	GGCGATTTGCACAGGATAGA	GGAGCCAATGAAAGCAACATC
	Prmt6	GGTGGAACAAGATACGGACAT	CTCATGGTCTCCCACTTTGTAG
	Setdb1	ATCAGCTCAAGATGTCCAGAAG	CCTGACCCAAGGTTCCTTTAT
	Setdb2	TCTGCCACAAATGGAGACTATG	CACTCTGAGTCACAGGTGTATG
	Smyd1	GGAAGTGGTGAAGGAGATGATAC	GCTTCACAACCTCGTGATACA
	Smyd2	CGGCGATATTCCCTGATGTT	TCCTGTACAGCTCTGACTTCT
	Suv39h1	CTCTGCATCTTCCGCACTAAT	CTGAGGTAATAATCTCTCCCACATAC
	Suv39h2	GTGAATCATAGTTGTGACCCAAATC	CAGCTCTTCTCCAGCGTTTAT
	Suv420h2	CTGCTCTCAAGACCCACATTT	AAGCACGGGTAGACACAATC
Histone demethylation	**Jmjd1c**	GCCATGATGCCAACAAGATATG	GTACAAAGAACCCTGGCAAATG
	Kdm6b	GAGGAACCAGACAGCACTAC	CTTCCACCTCTTGGCATCA
	Jmjd4	AAGTATGGAGACGCGGTTG	GTAACTGATATAGTCGCGGAAGG
	Jmjd6	CCATTGCCATCACCCAGAA	GCTCCTGTTTCAAGATCCTATACC
	Jmjd7	CTTGCACAAGGACCACTATGA	TGCTGGTGTGTAGAGATTGTAAG
	Jmjd8	GAATTGCAGGAGCTGGATCT	TGTCTTCTCAGGAGGGTAGAG
	Kdm1a	TGGGATCAGGATGATGACTTTG	GCACTGCTGTGTTCAGTTTAAT
	Kdm1b	GACTCAAATCTCCAGTGCAAAG	GATGGCACCTCTCTGTAGTATG
	Kdm3a	TCATCCACAGCAAAGACAGAA	GGCCTCTTGGATGAATCAGAA
	Kdm3b	GTGACCAAGCAGAGGATTCA	TTGCTCTTCTCCAACCTTCC
	Kdm4b	CAGCCGGATTACACAGGAAG	TGGACTCAGCGCAGTTAAAG
	Kdm4c	AGTTGTTATGGTGTCCCTTCTC	GAGCCCACTGATTGTTCTTAGT
	Kdm5a	CCTGAATGAACTTGAGGCAATG	CACCACAGGGATCTTCAATGTA
Chondrogenesis	**Acan**	TGGAGGTCATAGTGAAAGGTATTG	ATGATGGCGCTGTTCTGTAG
	Col2a1	TGGCTTCCACTTCAGCTATG	GGTAGGCGATGCTGTTCTT
	Prg4	TGGAGGACTAACAGGGAAGATA	CTGAATGTTGCCACCTCTCT
	Alpl	GCCATGACATCCCAGAAAGA	GCCAGACCAAAGATGGAGTT
	Col1a1	ACAAGGTGACAGAGGCATAAA	ACCAGGAGAACCAGGAGAA
	Col10a1	AACGCCCACAGGCATAAA	CTCCTCTTACTGGAATCCCTTTAC
	Spp1	CTTTCACTCCAATCGTCCCTAC	TGGCATCAGGATACTGTTCATC
	Znf219	CGGCCACCCAAGAAGAAA	CGCCGAGCGGAAAGATT

Table S1. Sequences of primer pairs used for the PCR assay analyses.

Gene	Accession number	Primer sequence	Amplicon size
1. Epigenetic marker genes			
Dnmt3a	XM_006514953.3	CTGTCCCTACGACCAGTGC CTGATGTCAAGCCCTCGGAA	110
Tet1	NM_001253857.2	CTGGGGCCATCCAAGTCAAT TGTGTGAACCTGATTTATTGTGGT	120
Ogt	NM_139144.4	TTCAGTATTCTGTGCCGCCC TCGTTGGTTCTGTACTGTCGG	188
2. Chondrogenic marker genes			
Sox9	NM_011448.4	GGAAGTCGGTGAAGAACGGA AGATTGCCCAGAGTGCTCG	158
Col2a1	NM_031163.3	TCATCTTGCCGCATCTGTGT TGCCCCTTTGGCCCTAATTT	164
Acan	XM_006540566.1	ATTCCCGCCCACCTACCT GCTGACTAGGTTTCGGAGCA	190
3. Reference genes			
Actb	NM_007393.5	AGATCAAGATCATTGCTCCTCCT ACGCAGCTCAGTAACAGTCC	174
Sdha	NM_023281.1	TCGACAGGGGAATGGTTTGG GGACTCCTTCCGAGCTTCTG	110

Table S2. Sequences of primer pairs used for the quantitative real-time PCR analyses. Nucleotide sequences, gene accession numbers and amplicon sizes are displayed for each primer pair.

>T7promoter-Dnmt3a (anti-sense) Clone#:D7
chr12:3,907,819-3,908,735
GCCAAGCTCTAATACGACTCACTATAGGGAAAGCTCGGTACCACGCATGCAGACGCGTTACGTATCGGATCCAGAATTCAGATTGCACG
CGAGTCTGGATAAATTCCACACTCAGCTTCCCCAGGGTCCGACCACCTCAGCTGAGCCCCTTTTTGGCAGGTGAAGCTAGGCATGGGGC
AGGGGTGGGGGGTGATATGGGTCATCCTTCAGTTTGTTAAAACCCCCTCCAGCTGCTCCCCTCTCCCCATCCTGGGCTGAAACCCTTTG
CACAGAGGGCCAGGCGGAAGCTGATGTCTTTGCTCATCTCGCTGTTTTGAAAGCACCATTATGAAGTCGGGATGTACAGTAGTTAACAG
TACCTTTTATATATATATATCTCATATCTATCATATATATATAAACTGTAAACAAGAGGTAACAGCGGCTTCTAGAAACTGGTTTTCTT
CAAGGTTTCCTGTGTGGTAGGCACCTGAAATACTGTAGAAAAGTGTCTGGTGTGGTGTTCTCTCAGCGCCCTGCTGCTAGTTGGGTTCT
GTTTTGCATGACCAGGAATGGTGCTGTTGAGACTGCTCGGGGGTGGGAGAGGAGACTCTGCCTCCGAGGGTCTCTATTCTCTTCCTGTT
TGTGCTCCTATCTGATCAGGCTAGAGACAACCAAAGAGATATATAGAAAAGGAAAAAAAAAAAACCAATATTTTAAGTTTTTATAGAAT
TTTCCCTCTCTCCCTTTCCTCTCCAAGGCATTTCTACTTTTTGTTGTTACTGATTTTGCTGCAATAACTCTCTTGTTTCAGTCACAGCA
AGAAACAAAAACCCAAACAAACAGAAAACCCCTCTGAAAAAGAGTAGAAAACAAAAAGTTCGCCTCCTAGGACCGGAGGGGAAGAAGGG
GAGGGGCCTATTTTGCTTTTTAGATAGGACTGAAGGTTAACATTGAAAACTCAGGAGATGATGTCCAACCCTTTTGCAAGGCCAAGCCC
TCCGGCGTTTTCCTCCTCTGGGGTTTGCTTTAAATTCCTTTTTCTCTTCTGGGTGCTGAACTTTTCTCCGTCCTCTCGTTCTTGGGGGT
TTAATGGTTTTGTTTTGTTTTTGGTTTGTTTGTTGGTTAAATTTTTTTATCATCACTACTTCAGTTTGCCCCCATGTCCCTTAACCACA
AATCACGAATTCGTCGAAAAGCTTCTCAAGCCTAGGCTAGCTCTAAACCCAACGTGTGGGGGCCCCAACTCCCGGCCCCTTGAATTCTA
TAAGGTCACCTAAAGGGCCGCACAATTCCATGGGCCGCCGTTTTACAACGCCGGGACTGGAAAAACCCTGGGGTTACCCAATTT

>T7promoter-Ogt (anti-sense) Clone#:O2
chrX:101,682,485-101,683,489
CCAAGCTCTAATACGACTCACTATAGGGAAAGCTCGGTACCACGCATGCAGACGCGTTACGTATCGGATCCAGAATTCGTGATTCTACC
AAGGCCGAATCCATAGAGTTTGAAGCTAAGTCCAGACATTCTAACACAGTCTAAAAATAAAATAACTGCCTGTATAGAGATGCTTCTTC
AGAGCGGTGAACACCATTTAAGGTACTGGAGAGAACTGTAATTTACTAACCAAACATTTGAATACTTATATACTTACCTGGGATTTCAT
TTCTGCTGAAAGAAATGGGAAGAACAGGACTCACTTTAAAAAAAAAAACAAACTTTAGAAAGGAAGGTAAAAATCTTATCACACTATTA
CTTTTGGAAGCAGCATAGGAGGGGCAGTCAAGGGCTGAAACACTGGTGAAACAGGTAAAACTTAGGCAGAAAAAAACCCTATATTATTA
TCAATAACAGTACCACAACTGTGACCTTCATGATTAATATTCACTCCTAAGAATTTTCATTTGGCACCAGATGGCATGTTCGAGAGAAA
CACCCTGGGATGTCTGAAAGCAGACATGGGTTTGTTAGCAGTCACAGGAGAATTTAACGGGAGCTGGGGTGTGTAAAACAGGCTGAAAA
GTCTTAAGTCATCATCTAAACAAAGCACTGACAGTGCCAAGCATTAGGTCAGACACTAAAATGACTGATATAGGCTCATGTGGTTTATA
AAACCTATAAAAAGACTACACCAGCAAGGTCCCTGTCACCCTGTCAGAGTTCAGACACTAAAACAGGAAGCAACATTTTAGTTTAAAAC
CTCAGAAGAATCAAGATCACTTCACATGAGTAAAAATACCTGAAAGCAAACATTTTTAAAAGCTCCAAAACCCAAAATATAAAGAAAAA
AAAAAGGATCAGAAGACTTGATCAATCCACGGCATCACAAAACGGCTGGTTAATCTCTATCTCCCCTCCACATTAAGCATCCCATGGAA
GACCAAGGGAGACCAGACCTTCCAGACCTGTGCACCACCTGTTTGCTGCAAAACTCTAAGAGATTCCTTGTGGAATAGCATTTCTTCTT
TCTTGTCTCTCCCTATCATGCAGAATCTGAATTCGTCGACAAGCTTCTCGAGCCTAGGCTAGCTCTAGACCACACGTGTGGGGGGCCCC
AACTCCCCGGCCGCTGTATTCCATAGGGGCCACCTAAATGGGCCGCACAATTCACTGG

>T7 prom-Tet1 (anti-sense), Clone#T1
chr10:62,811,427-62,812,547
CCAAGCTCTAATACGACTCACTATAGGGAAAGCTCGGTACCACGCATGCAGACGCGTTACGTATCGGATCCAGAATTCGTGATTGGGTA
AGGGTGACAATGCTAACGCAAGCATGTCCCCTCAATTATCTCTATAGAATATTTCCTTCTCATTTGGGAAGGACATGTCTCTTAATTAT
GTATTTTCTAATCTTGAAACACTGGGAACTTTTGACTGATCCCAATTTGCCTCCTTTTCCTTTGAAAACACCTGTAATTGGGTCATATA
GTTAATTGACGAGGTGACTTCAGAAGACAATATTTTTTCTAGTTAAAGAGGGAAAATTGATATTGGTAGCATCTTGTATTTAAATTTTT
TTTTTTAGAGACCCTCTATTCTATAAGTAAAGAACAGAAGCCGTGTGTTATTTGAGTACAGGCTGAGGTTAACGGGATGGGACTCTACA
GAGCAAGAACAAATGACTTCTCTGGTATTCAAATATGCACACATAATAGACAATAGGATTCTGCTACTATACTATTTCAAGTTACTCTT
AAAAGTAGAAAGTGCTTTTTAAAATATATACATTTATAGTTAGCGAACAGCTTCCAACCATCATGAGAATAGAGAACTACTTTATATAG
GAGAAATGTTTTAAGAGAAAAAGCATTTCATTGGTTTACTTCAAAGAAATGTGCAGACACGATGGCAATGATTGGAAGAGGCTTGAGCA
ATGGCACCAGAAAACAATCACTCAGCTCATCACTCCGTGTGTTGATGTGGTTAAAGCACCAGGAACTGTGTAGAGTTAACACTACATCT
TGGTCTTTACTTCTTATTGCAGGAACCTGTTATAAACCCTCTGAATAGTAAACAAACCCGGGGGAAAGCACCAGACTCTATGGTTCTAG
CATGGCCAACACCTAACCAAGATGTTCCTTTAAGTATTTAAAACTATAAAAAGTTTATTTTTGCTGAAAATGTTCACCTTCTACCAATT
CTCAAAATGTAATCACAGTTAAGTATTCACCCTTTTTTTTTTTTTTTAATATTTACGTCGGAATTGAAATGGGCGAAACAAAGCTTCC
GTAAACAACAAAATGACTTTCTTTTTAACAGCACCGGAAAAAACAAAAAAACCAAAGAAAACCAACCAACCAAACAAAAATTCCCCCTT
ACCCCCCTTTAGCCAAGGGCTTTACTTGGAGAAAAGCCTTTAGACCCACCGATTGGAAGGGAATCTGAATTCGTCCAAAAACTTTCCCA
AGCCTAGGCTAACTCTAAAACCAACCGTGGGGGGGGCCCCAACTTCCGGGCCCCTTGAAATCCTTAAGGGGCACCCTAAAGGGCCGCCC
AAATTTCCCGGGGCCCGCCTTTTTACAAGGCCCGGGACTGGGAAAAACCTGGGGGGTTACCAAATTAAAACCCCTTGGCGAAAAATCCC
CCTTTTCCCCCGTGGGGCGTATAAAGACAAGAGG

Table S3. Sequence data of the 3'UTR regions of *Dnmt3a*, *Ogt* and *Tet1* genes with insert flanking T7 promoters for antisense probe preparation. These regions were cloned into pDrive vector and later amplified for digoxigenin-labelled RNA probe preparation.