

Additional file 1**Table S1:** qRT-PCR primer sequences

Gene	Gene ID	Primer sequence
SDC1	6382	F 5'- CTCAGGTGCAGGTGCTTTG R 5'- CTGCGTGTCTTCCAAGTG
SDC2	6383	F 5'- GATGACGATGACTACGCTTCTG R 5'- TGGAAGTGGTCGAGATGTTG
SDC3	9672	F 5'- CTCCTTTCCCGATGATGAAC R 5'- CGACTCCTGCTCGAAGTAGC
SDC4	6385	F 5'- GGCAGGAATCTGATGACTTTG R 5'- TCTAGAGGCACCAAGGGATG
GPC1	2817	F 5'- CATCGGGTGTGGAGAGTG R 5'- TGAGCGTGTCCCTGTTGTC
GPC2	221914	F 5'- CTGGGACACGACCTGGAC R 5'- GCCATCCAGTCATCTGCATAC
GPC3	2719	F 5'- CTGCTTCAGTCTGCAAGTATGG R 5'- GTGGAGTCAGGCTTGGGTAG
GPC4	2239	F 5'- AGTGTGGTCAGCGAACAGTG R 5'- CAAACATATCATTGAGGGATTCTC
GPC5	2262	F 5'- GCCGCCCTGTAAGAACAC R 5'- TCATTCCATGCTTCTCTTTGC
GPC6	10082	F 5'- CCAGGCATAAGAAATTTGACG R 5'- CATGTACAGCATGCCATAGGTC
PRCAN	3339	F 5'- TGGACACATTTCGTACCTTTCTG R 5'- CACTGCCCAGGTCGTCTC
AGRN	375790	F 5'- ACTGTGTCTGCCCCGATGC R 5'- GACACTCGTTGCCGTATGTG
COL18A1	80781	F 5'- GTACAAGGGAGAGATTGGCTTTC R 5'- TTTCTCTCCTTTCAATCCGTTT
B3GAT3	26229	F 5'- GAAGAACGTGTTTCTCGCCTAC R 5'- CCTCAGATCCTTCTGCCGTA
EXTL2	2135	F 5'- TGAAGTGGAAACCAATGCAG R 5'- AGGAAATTGCTGCCAAACTG
EXT1	2131	F 5'- GAGACAATGATGGGACAGACTTC R 5'- CTCTGTCGCTGGGCAAAG
EXT2	2132	F 5'- CTGGGACCATGAGATGAATA R 5'- GATATCCCCAGGCATTTTGTA
CSGALNACT1	55790	F 5'- TCAGGGAGATGTGCATTGAG R 5'- AGTTGGCAGCTTTGGAAGTG
CHSY1	22856	F 5'- GCCCAGAAATACCTGCAGAC R 5'- GCACTACTGGAATTGGTACAGATG
CHPF	79586	F 5'- GGTGCACTATAGCCATCTGGA R 5'- GGCACCTCGGAAATGAGG
CHSY3	337876	F 5'- GACTCAGTGTGTCTGGTCTTACG R 5'- TTGCTATTGTGAAGGTCTTGA
NDST1	3340	F 5'- CTGCCCTCTACCTGTTCTTG R 5'- AACTGGATCTCCTCAAAGGTCTC
NDST2	8509	F 5'- CAAGAGCTGCGTACCAACC R 5'- GAGGGTCCGTGTGTAGTTACG

NDST3	9348	F 5'- CCTTGCAGAAGAGATGTTTGG R 5'- GTAGCAGGATCAGTTCTTAGTTGTTG
NDST4	64579	F 5'- GACATTGGGCTCCATCTGAC R 5'- GCTGCTGTCCATCAATAATTAGC
GLCE	26035	F 5'- TGTGGAAGTCCGAGACAGAG R 5'- CTGGATTGGATAGAAATAGCCTTG
HS2ST1	9653	F 5'- TGGAGATGATTATAGACCAGGGTTAC R 5'- GCTATGGCCACAGAAGAACG
HS6ST1	9394	F 5'- GCAGGGAGTGGAGCTAACAG R 5'- AACAGTTCCAGTTCCCGAAA
HS6ST2	90161	F 5'- CGGTGCGATCTTCTCCAA R 5'- AGGACGATCACGGCAAATAG
HS6ST3	266722	F 5'- CAACCACAGCCACACCAG R 5'- CTTCTTCCATCACACATATGAAGAG
HS3ST1	9957	F 5'- CAGCCAGATGCCCTTCTC R 5'- AGACTCGCTCAGGCACTTTG
HS3ST2	9956	F 5'- GATTGGTACAGGAGCCTGATG R 5'- GGAGCCTCTTGAGTGACAAAG
HS3ST3 (*)	9955 9953	F 5'- TGGTACCGGGACCTGATG R 5'- CGCGTGACGAAGTAACTGG
HS3ST4	9951	F 5'- TAGAGCCGCACTTCTTCGAC R 5'- GGTTATTTGCCCATCCAAAG
HS3ST5	222537	F 5'- CATCCGGCAGTAGTCAAAGC R 5'- TTGTGATTTGCTGAGGGTAGG
HS3ST6	64711	F 5'- GCCCTGCTGGAGTTTCTG R 5'- GCGCTCGTAGCACCTGTC
SULF1	23213	F 5'- CCAGCAGAAGCCAAAGAAAG R 5'- GAACGTGTCTGCCGAGTATG
SULF2	55959	F 5'- GCCTGCAAGAGAAGGACAAG R 5'- AGCAGCTTGCGGAGTTTC
CHST11	50515	F 5'- CGCTGCTGGAAGTGATGA R 5'- AGGATAAAGGATCCCAAGCAA
CHST12	55501	F 5'- GTAGCCGACAAATCCTTCCA R 5'- ACCGGTTTACCTCTGACTTGAC
CHST13	166012	F 5'- CCGGCATTTGGAAACAGA R 5'- TCCAGGTCATAGAGCTTCTGC
CHST14	113189	F 5'- CCACTGCCTAATGTCACCAA R 5'- ATGACAGGCAGAAGCACAGA
CHST15	51363	F 5'- GTGCCAGGAATAAAGTTCAACA R 5'- CACTGGATAAGTCCCGAGTGA
CHST3	9469	F 5'- TGCACAGCCTGAAGATGAGA R 5'- CAGCTTGTCTGAGACCCTTGA
CHST7	56548	F 5'- GATCCGGGTCAGTCACCA R 5'- GACAGATTGCCCCCACAG
DSE	29940	F 5'- GTCCAGAGGCACTTCAACATC R 5'- AGTCCGCAATAGCCACAGTC
UST	10090	F 5'- ACCATGGACCACCTCCTAGTAA R 5'- CACACTTGCCTACCCTGTTGTA
HPSE (exons 5-6)	10855	F 5'- ATGCTCAGTTGCTCCTGGAC R 5'- CTCCTAACTGCGACCCATTG
HPSE (exons 9-10)	10855	F 5'- CTTTGCTATCCGACACCTTTG R 5'- TATTCTTTGGAGCAGGAACTACC
HPSE 1a	10855	F 5'- GCGGGAGGAAGTGCTAGA R 5'- CCAGGAGCAGCAGCATCA

HPSE 1b	10855	F 5'- TCTCCGCACCCTTCAAGT R 5'- CCAGGAGCAGCAGCATCA
HPSE (full 3' UTR)	10855	F 5'- AATGCCAAAGTTGCTGCTTG R 5'- GCGAGATCAAAATACTGTGCTAAA
HPSE (short 3' UTR)	10855	F 5'- CAGGAAGTTCACTGGGCTTG R 5'- CGTCACCCACTAGTTGCTTTG
HPSE2c	60495	F 5'- CACCCTGATGTTATGCTGGAG R 5'- TCCAGAGCAATCAGCAAAGTTA
HPSE2	60495	F 5'- GGCCGAGGAAGAATGTCA R 5'- GTGTGTCTAACAGGCGAGTTTTTC

(*) This pair of primers identifies a sequence that is common to HS3ST3A1 and HS3ST3B1