

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

Gene	Gene ID	Primer sequence
<i>XYLT1</i>	6382	F 5'- CTCAGGTGCAGGTGCTTTG R 5'- CTGCGTGTCCCTTCCAAGTG
<i>XYLT2</i>	6383	F 5'- GATGACGATGACTACGCTTCTG R 5'- TGGAAGTGGTCGAGATGTTG
<i>B4GALT7</i>	9672	F 5'- CTCCTTTCCCGATGATGAAC R 5'- CGACTCCTGCTCGAAGTAGC
<i>B3GALT6</i>	6385	F 5'- GGCAGGAATCTGATGACTTTG R 5'- TCTAGAGGCACCAAGGGATG
<i>B3GAT3</i>	2817	F 5'- CATCGGGTGTGGAGAGTG R 5'- TGAGCGTGTCCCTGTTGTC
<i>B3GAT1</i>	221914	F 5'- CTGGGACACGACCTGGAC R 5'- GCCATCCAGTCATCTGCATAC
<i>B3GAT2</i>	2719	F 5'- CTGCTTCAGTCTGCAAGTATGG R 5'- GTGGAGTCAGGCTTGGGTAG
<i>FAM20B</i>	2239	F 5'- AGTGTGGTCAGCGAACAGTG R 5'- CAAACATATCATTTCAGGGATTCTC
<i>PXYLP1</i>	2262	F 5'- GCCGCCCTGTAAGAACAC R 5'- TCATTCCATGCTTCTCTTTGC
<i>CSGALNACT1</i>	55790	F 5'- TCAGGGAGATGTGCATTGAG R 5'- AGTTGGCAGCTTTGGAAGTG
<i>CSGALNACT2</i>	55454	F 5'- GCCATTGTTTATGCCAACCA R 5'- ATCCACCAATGGTCAGGAAA
<i>CHSY1</i>	22856	F 5'- GCCCAGAAATACCTGCAGAC R 5'- GCACTACTGGAATTGGTACAGATG
<i>CHPF</i>	79586	F 5'- GGTGCACTATAGCCATCTGGA R 5'- GGCACCTTCGGAATGAGG
<i>CHSY3</i>	337876	F 5'- GACTCAGTGTGTCTGGTCTTACG R 5'- TTGCTATTGTGAAGGTCTTGGA
<i>CHST11</i>	50515	F 5'- CGCTGCTGGAAGTGATGA R 5'- AGGATAAAGGATCCCAAGCAA
<i>CHST12</i>	55501	F 5'- GTAGCCGACAAATCCTTCCA R 5'- ACCGGTTTACCTCTGACTTGAC
<i>CHST13</i>	166012	F 5'- CCGGCATTTGGAAACAGA R 5'- TCCAGGTCATAGAGCTTCTGC
<i>CHST14</i>	113189	F 5'- CCACTGCCTAATGTCACCAA R 5'- ATGACAGGCAGAAGCACAGA
<i>CHST15</i>	51363	F 5'- GTGCCAGGAATAAAGTTCAACA R 5'- CACTGGATAAGTCCCGAGTGA
<i>CHST3</i>	9469	F 5'- TGCACAGCCTGAAGATGAGA R 5'- CAGCTTGTCTGAGACCCTTGA
<i>CHST7</i>	56548	F 5'- GATCCGGGTCAGTCACCA R 5'- GACAGATTGCCCCACAG
<i>DSE</i>	29940	F 5'- GTCCAGAGGCACTTCAACATC R 5'- AGTCCGCAATAGCCACAGTC

<i>UST</i>	10090	F 5'- ACCATGGACCACCTCCTAGTAA R 5'- CACACTTGCCTACCCTGTTGTA
<i>EXTL2</i>	2135	F 5'- TGAAGTGGAAACCAATGCAG R 5'- AGGAAATTGCTGCCAAACTG
<i>EXTL1</i>	2134	F 5'- GATGAGAGGCTCCCACTTCA R 5'- CCTCCAGAGTGGTATGGATGA
<i>EXTL3</i>	2137	F 5'- CTCCGCCATGACGAAATC R 5'- AGTTGGAGTTGTAGAGCCAGGA
<i>EXT1</i>	2131	F 5'- GAGACAATGATGGGACAGACTTC R 5'- CTCTGTCGCTGGGCAAAG
<i>EXT2</i>	2132	F 5'- CTGGGACCATGAGATGAATA R 5'- GATATCCCCAGGCATTTTGTG
<i>NDST1</i>	3340	F 5'- CTGCCCTCTACCTGTTCTG R 5'- AACTGGATCTCCTCAAAGGTCTC
<i>NDST2</i>	8509	F 5'- CAAGAGCTGCGTACCAACC R 5'- GAGGGTCCGTGTGTAGTTCAG
<i>NDST3</i>	9348	F 5'- CTTGCAGAAGAGATGTTTGG R 5'- GTAGCAGGATCAGTTCTTAGTTGTTG
<i>NDST4</i>	64579	F 5'- GACATTGGGCTCCATCTGAC R 5'- GCTGCTGTCCATCAATAATTAGC
<i>GLCE</i>	26035	F 5'- TGTGGAAGTCCGAGACAGAG R 5'- CTGGATTGGATAGAAATAGCCTTG
<i>HS2ST1</i>	9653	F 5'- TGGAGATGATTATAGACCAGGGTTAC R 5'- GCTATGGCCACAGAAGAACG
<i>HS6ST1</i>	9394	F 5'- GCAGGGAGTGGAGCTAACAG R 5'- AACAGTTCCAGTTCCCGAAA
<i>HS6ST2</i>	90161	F 5'- CGGTGCGATCTTCTCCAA R 5'- AGGACGATCACGGCAAATAG
<i>HS6ST3</i>	266722	F 5'- CAACCACAGCCACACCAG R 5'- CTTCTTCCATCACACATATGAAGAG
<i>HS3ST1</i>	9957	F 5'- CAGCCAGATGCCCTTCTC R 5'- AGACTCGCTCAGGCACTTTG
<i>HS3ST2</i>	9956	F 5'- GATTGGTACAGGAGCCTGATG R 5'- GGAGCCTCTTGAGTGACAAAG
<i>HS3ST3 A1</i>	9955	F 5'- GGCCGAGAGAACCTGAACTC R 5'- CGAGCGACAGTGACTTCCA
<i>HS3ST3 B1</i>	9953	F 5'- GCAGATCTTGCCTCGATGTC R 5'- GCGCACGAGTACAGGAACATA
<i>HS3ST4</i>	9951	F 5'- TAGAGCCGCACTTCTTCGAC R 5'- GGTTATTTGCCCATCCAAAG
<i>HS3ST5</i>	222537	F 5'- CATCCGGCAGTAGTCAAAGC R 5'- TTGTGATTTGCTGAGGGTAGG
<i>HS3ST6</i>	64711	F 5'- GCCCTGCTGGAGTTTCTG R 5'- GCGCTCGTAGCACCTGTC
<i>SULF1</i>	23213	F 5'- CCAGCAGAAGCCAAAGAAAG R 5'- GAACGTGTCTGCCGAGTATG
<i>SULF2</i>	55959	F 5'- GCCTGCAAGAGAAGGACAAG R 5'- AGCAGCTTGCGGAGTTTC