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| **Additional Data 9. Oligonucleotide sequences used in generating *in situ* probes**T7 promoter sequence is indicated in blue |
| Gene | Oligonucleotide sequence |
| Mouse | 5’ -> 3’ |
| *Eya1* | Fwd | ggcagacacacatctatttttc |
| Rev | TAATACGACTCACTATAGGGATTCCAAGGCATGATGCAGTG |
| *Uchl1* | Fwd | agccgatggagattaaccccg |
| Rev | TAATACGACTCACTATAGGGGCTGCTTTGCAGAGAGCCAC |
| *Slc5a7* | Fwd | ccatcctgtcggcgagttc |
| Rev | TAATACGACTCACTATAGGGCCGGACTGGAATCAACATCAAG |
| *Coch* | Fwd | cacatgcccaactggtttggc |
| Rev | TAATACGACTCACTATAGGGTTGCTGGGATTCTAAGAAGTCTC |
| *Dnmbp* | Fwd | gggtgccatcgacagaacag |
| Rev | TAATACGACTCACTATAGGGCCGGATATAGTTGGATGGGAC |
| *Ctxn1* | Fwd | agttcggcgtggacactatc |
| Rev | TAATACGACTCACTATAGGGCACCAACGCATAGTCGAACTG |
| *Spint1* | Fwd | GGGCTCCTTCCCACGCTGGTAC |
| Rev | TAATACGACTCACTATAGGGTCCTCTGTGGTGGAAACAGTG |
| *Clmp* | Fwd | AGGACGCTATGTCTGGAGCC |
| Rev | TAATACGACTCACTATAGGGGACAGTTTGGAAGGCTTTGCTC |
| *Ppp1r1c* | Fwd | GAGCCCAATAGCCCCAAAAAG |
| Rev | TAATACGACTCACTATAGGGGGTTCCACTTCTCTTCTCTTTC |
| *Serinc1* | Fwd | CGTGCTATTCTTTGTCTACTAC |
| Rev | TAATACGACTCACTATAGGGCCCGATTTGTAAGAACAAGTGG |
| *Etv5* | Fwd | ggatgcctggtcctccagcac |
| Rev | TAATACGACTCACTATAGGGAGGCTGCTGCAGCGATCCATG |
| *Alcam* | Fwd | ggaggtgaccaagcagattggcg |
| Rev | TAATACGACTCACTATAGGGCATATTACCAAGGTCCTTGTTTAC |
| *Thra* | Fwd | GGCGAAAATTCCTGCCGGATGAC |
| Rev | TAATACGACTCACTATAGGGGATCCTCAAAGACCTCCAGGAAG |
| *Lypd1* | Fwd | TGTCAGAAAGAAGTGATGGAGC |
| Rev | TAATACGACTCACTATAGGGGCAGTGTGCCAAGCAGAGGGC |
| *Cib2* | Fwd | GGGAACAAGCAGACCATCTTCAC |
| Rev | TAATACGACTCACTATAGGGGATTCGAATGTGGAAGGTGCTG |
| *Fpgs* | Fwd | TGTGCAGGCCTGTGTGCACTG |
| Rev | TAATACGACTCACTATAGGGGAGGGATCCAGCAGTTTCAG |
| *Tent5c* | Fwd | AACAAGAACGGGAGGAACGTG |
| Rev | TAATACGACTCACTATAGGGGGTAATTGGAGGGTGCGCAATG |
| *Qsox1* | Fwd | CTCTTCTGCATCTAGACACAC |
| Rev | TAATACGACTCACTATAGGGTTCTCAGCCTGGCCCGAAAG |
| *Wsb1* | Fwd | GGAAGCTGGAAGGTCATCACC |
| Rev | TAATACGACTCACTATAGGGACCGCGGTAGGAGAGAAACGC |
| *Rab18* | Fwd | GACGAGGACGTGCTGACCAC |
| Rev | TAATACGACTCACTATAGGGTAGCACAGAGCAGTAACCGC |
| *Atp6v1d* | Fwd | CGGGCAAAGACCGGATTG |
| Rev | TAATACGACTCACTATAGGGTCGAACAGCAGGTCTTCATCC |
| *Skp1* | Fwd | CCTACGATAAAGTTGCAGAGTTC |
| Rev | TAATACGACTCACTATAGGGCTTCTCTTCACACCATTGGTTC |
| *Psma6* | Fwd | CCGACTCTACCAAGTAGAATATGC |
| Rev | TAATACGACTCACTATAGGGACAAGGTGAGCGTCAATCTCTG |
| *Spcs1* | Fwd | TCGGAGACATCCGCTTCC |
| Rev | TAATACGACTCACTATAGGGCTGTCCCCTGATTTCTTGTCTTC |
| *Mad2l1* | Fwd | GCACAGCAGCTCGCCCGAGAG |
| Rev | TAATACGACTCACTATAGGGGACAGGGGTTTTGTAGGCCAC |
| *Slc2a8* | Fwd | CCTCATCATCGGCATTTCCC |
| Rev | TAATACGACTCACTATAGGGCGTCCCTCGAAATGGGCTGTG |
| *Klhl36* | Fwd | TAAACAGTGGATCAAGGTGG |
| Rev | TAATACGACTCACTATAGGGGACACACCCGCAATGGCG |
| Gene | Oligonucleotide sequence |
| Skate | 5’-3’ |
| *Eya1* | Fwd | gccacagatggctttcATGC |
| Rev | TAATACGACTCACTATAGGGCAAGTACTCCAGTTCCAAGG |
| *Uchl1* | Fwd | TGGCTTCGAGCTGGAAGTTC |
| Rev | TAATACGACTCACTATAGGGATTTGCACAGAGCCACTGCAG |
| *Slc5a7* | Fwd | CTTGCTTTCAGACAAGAGGC |
| Rev | TAATACGACTCACTATAGGGTGCTTCCTTATTGGTGAAAGC |
| *Coch* | Fwd | GATGGCCCTCGGATGACGTGG |
| Rev | TAATACGACTCACTATAGGGTATCAGGCACCAACTTGTGAAC |
| *Dnmbp* | Fwd | CTCGGACATCTCGGTGGGAAG |
| Rev | TAATACGACTCACTATAGGGGGCACGTAGCCCTGCTTGCCG |
| *Ctxn1* | Fwd | GACGATGCCGCCGCCATGAATG |
| Rev | TAATACGACTCACTATAGGGCACCAAGGCGTAGTCAAACTGzzzz |
| *Spint1* | Fwd | CCATAACCGTCCTCTCGCCAG |
| Rev | TAATACGACTCACTATAGGGGACGGGCTTCGAGTCCAGGTG |
| *Clmp* | Fwd | TGCAGGCGACAGATTCTGGAC |
| Rev | TAATACGACTCACTATAGGGCACAGTCTGGAAAGCCCTGG |
| *Ppp1r1c* | Fwd | GAAGATTCAATTTGCTGTGCCG |
| Rev | TAATACGACTCACTATAGGGGTTGGTCTTTGGTAACCACTC |
| *Serinc1* | Fwd | ATGGAAGAGGGCAATTCTAGG |
| Rev | TAATACGACTCACTATAGGGCACGAGTTGTCAAAACAAGTGG |
| *Etv5* | Fwd | CATACCGGCGCCAGTCGGGAG |
| Rev | TAATACGACTCACTATAGGGCACTGATCCGTGTCCAGCAGG |
| *Alcam* | Fwd | GGAGATGAGAAAGCTGTGGG |
| Rev | TAATACGACTCACTATAGGGCACAGCTGAGGAGCCTGATG |
| *Thra* | Fwd | ACCAACGCACAAGGCAGCCAC |
| Rev | TAATACGACTCACTATAGGGCCTGATCTTCAAATACCTCC |
| *Lypd1* | Fwd | CAGATCTTCATTTACACAACTTTC |
| Rev | TAATACGACTCACTATAGGGGTTAAGAGTGTTGAAGTGAGCATTC |
| *Cib2* | Fwd | GCTCCTCACATAGTGCCAATGG |
| Rev | TAATACGACTCACTATAGGGGATCCGAATGTGAAATGTGCTG |
| *Fpgs* | Fwd | CATATTACATTGATGGTGCTC |
| Rev | TAATACGACTCACTATAGGGGCCCACTAGGTGGAGGCTG |
| *Tent5c* | Fwd | CTCCCTCCTGTTTTACTACG |
| Rev | TAATACGACTCACTATAGGGGGGAGCCAGGTAGGGTACGAC |
| *Qsox1* | Fwd | AGTGAGGATCCAAAGTTCCC |
| Rev | TAATACGACTCACTATAGGGCCACTTCCTTTCCTTGCTATG |
| *Wsb1* | Fwd | ACTGGCTTAAGCAATGGACGC |
| Rev | TAATACGACTCACTATAGGGGCCTTCACATTAAGCAGTTCAC |
| *Rab18* | Fwd | AGGGAGCGATGGACGAAGAC |
| Rev | TAATACGACTCACTATAGGGACTGAGCAATATCCACCAC |
| *Atp6v1d* | Fwd | CCGCTGGTGATAAAACTGAAG |
| Rev | TAATACGACTCACTATAGGGGATTGCATGAATCCACTCAGATC |
| *Skp1* | Fwd | CCTTCCATTAAGCTCCAGAGC |
| Rev | TAATACGACTCACTATAGGGCACACCACTGATTCTCCTTGC |
| *Psma6* | Fwd | TCGCGGGGATCGAGCGCCGGCTTC |
| Rev | TAATACGACTCACTATAGGGATCTCTCTCTGCCAGAGCAACC |
| *Spcs1* | Fwd | GCTGGCGAGAGCGGCGGAGAG |
| Rev | TAATACGACTCACTATAGGGATGCTTTTTAGGTTTCTTGGCAC |
| *Mad2l1* | Fwd | GCATCAACAGTATTCTGTACCAA |
| Rev | TAATACGACTCACTATAGGGGTACGCAACCAAACTGTTTAC |
| *Slc2a8* | Fwd | GCCTTTCCTTATTGGGATATTTC |
| Rev | TAATACGACTCACTATAGGGGGTCCTCTAAAGAGGGCCTC |
| *Klhl36* | Fwd | TAATCAGTGGCTCAAGGTTGC |
| Rev | TAATACGACTCACTATAGGGCCACAGTCTTGGCGTATAGTC |
| Gene | Oligonucleotide sequence |
| Chick | 5’-3’ |
| *Eya1* | Fwd | agatgattttcaatttggcagac |
| Rev | TAATACGACTCACTATAGGGGAAGGGCCATAAGGTCAGAG |
| *Uchl1* | Fwd | gcgtggcagcccatggagatc |
| Rev | TAATACGACTCACTATAGGGGGCAGACTTGCAGAAAGCCAC |
| *Slc5a7* | Fwd | catgtcatcagctgactcttc |
| Rev | TAATACGACTCACTATAGGGGGCTTCCTTGTTTGTGAAAGTTG |
| *Coch* | Fwd | tgtgttcattgtatctgtagc |
| Rev | TAATACGACTCACTATAGGGCAGGAACCATCTGCTCCAATC |
| *Dnmbp* | Fwd | agctcctttctgaagccctac |
| Rev | TAATACGACTCACTATAGGGGTACTCTGTCTTCCGGATG |
| *Ctxn1* | Fwd | gatgcatcgacgatggattatg |
| Rev | TAATACGACTCACTATAGGGCACCAAGGCGTAGTCAAACTGG |
| *Spint1* | Fwd | ATGACCCAACTCTTCAGCAGTG |
| Rev | TAATACGACTCACTATAGGGGACTGGTTTGGTGGCACCGTTG |
| *Clmp* | Fwd | GCTGGGCAGTACGAATGGGCTC |
| Rev | TAATACGACTCACTATAGGGCACGGTCTGGAACGCTCGGC |
| *Ppp1r1c* | Fwd | TGGAATAAGGGCGCAGCTCAGC |
| Rev | TAATACGACTCACTATAGGGTCCCTGGACAGTACCTTTGAGGG |
| *Serinc1* | Fwd | CGTTTATTACACTCATCCAGAAGG |
| Rev | TAATACGACTCACTATAGGGGTCACGATTTGTAAGAACCAGC |
| *Etv5* | Fwd | actgcatcgactcagaagtgcc |
| Rev | TAATACGACTCACTATAGGGggcaaagccctccgcgtaggg |
| *Alcam* | Fwd | cagattggagaggccctgcc |
| Rev | TAATACGACTCACTATAGGGGTCTCAGATTTATGATTGTTTTC |
| *Thra* | Fwd | TGGTGACCGAGGCGCACCGC |
| Rev | TAATACGACTCACTATAGGGCCTTCATGTGCAGGAAGCGGC |
| *Lypd1* | Fwd | CGGCTCTTCCTCCTCGCCGCTAC |
| Rev | TAATACGACTCACTATAGGGCAAGGAGCAGAGCGGTGGTTATC |
| *Cib2* | Fwd | GCACCAAACGTTGTGCCCATG |
| Rev | TAATACGACTCACTATAGGGAATAAGCTGAAACTTCCAGGATG |
| *Fpgs* | Fwd | AGCAGCATCCAAGCCTGCGTCC |
| Rev | TAATACGACTCACTATAGGGACCAGGTGCAGGCTGCCGGTG |
| *Tent5c* | Fwd | GAATGTGGAGCTGAAGTTTG |
| Rev | TAATACGACTCACTATAGGGGACTGGCTATATGGCACCGG |
| *Qsox1* | Fwd | TCAAGGAGCACTTCTCCCTG |
| Rev | TAATACGACTCACTATAGGGGGAAGCCGGGACGGCCCTTC |
| *Wsb1* | Fwd | CTGATGGACCATACAGAAGTTG |
| Rev | TAATACGACTCACTATAGGGCCACCACTTTTGATGGAGTAGG |
| *Rab18* | Fwd | GACGAGGACGTGTTGACCACG |
| Rev | TAATACGACTCACTATAGGGCATAGAACAATATCCACCACATG |
| *Atp6v1d* | Fwd | AGGCTCGCTTGAAGGGAGCTC |
| Rev | TAATACGACTCACTATAGGGCTCAAAGAGAAGGTCTTCATCC |
| *Skp1* | Fwd | CCTTCAATTAAGCTGCAGAGTTC |
| Rev | TAATACGACTCACTATAGGGCCACTGGTTCTCCTTACGTAC |
| *Psma6* | Fwd | CACATCACCATCTTTTCGCCC |
| Rev | TAATACGACTCACTATAGGGTCTCTGCCAGAGCTACAAGG |
| *Spcs1* | Fwd | CTGGACGTGTTCCGCTCC |
| Rev | TAATACGACTCACTATAGGGGCTTTTAGAATGCCTCTTTGG |
| *Mad2l1* | Fwd | GCCGCGCAGCTCAGCCGCGAG |
| Rev | TAATACGACTCACTATAGGGGTGAATCGTGGTAGTGAAGGAAC |
| *Slc2a8* | Fwd | GAAGCTAATGTTGAGGAGGAGGG |
| Rev | TAATACGACTCACTATAGGGACGCCTCAATCTGTTCCAGGG |
| *Klhl36* | Fwd | AGCTGGAGGCAGCTTTTCAAG |
| Rev | TAATACGACTCACTATAGGGACACACCAGCAATCGCTTTGGG |
| *Calm2* | Fwd | GCTGATCAACTGACAGAAGAGC |
| Rev | TAATACGACTCACTATAGGGCACCATCAATGTCTGCTTCCC |
| *Gpc3* | Fwd | TGACGTACGGGTGCCTGGCA |
| Rev | TAATACGACTCACTATAGGGCCCATCCTTGTTGTGCTGGT |
| *Gap43* | Fwd | AGCTCATAAGGCAGCCACCA |
| Rev | TAATACGACTCACTATAGGGGGCATTTTCTTGGTCCGCCT |
| *Rgs7bp* | Fwd | ACGACTGCAAGACGCTCGTC |
| Rev | TAATACGACTCACTATAGGGCTAATGGGTAGGGGGTCAAG |
| *Sstr5* | Fwd | ACTCTTCATGCTGGGCCTGC |
| Rev | TAATACGACTCACTATAGGGCACCTTGCTAGTCTGCATGTG |
| *Scn2a* | Fwd | CCGACTTGCCAGAATAGGCC |
| Rev | TAATACGACTCACTATAGGGTTCTGAGGGCATCCATCTCC |
| *Hs6st3* | Fwd | CAACCGCACGCTCAGGAACT |
| Rev | TAATACGACTCACTATAGGGCCACCGTGCAACCTGGCTAT |
| *Mdga1* | Fwd | ATGATGGGAAGCTGCGCCTG |
| Rev | TAATACGACTCACTATAGGGGCCGCGTCCAGTCAAAGTTG |
| *Chrnb3* | Fwd | GGGTCATGGACATATGATGGC |
| Rev | TAATACGACTCACTATAGGGCAAAGTGCTGTTCAGCCACATC |
| *Rtn1* | Fwd | AGCCTGTCAGAGGACGAGCT |
| Rev | TAATACGACTCACTATAGGGCAGGAGGCTGCCAAACACGA |
| *Pcp4* | Fwd | AGCGAGAGACAAGGAACCGG |
| Rev | TAATACGACTCACTATAGGGGGACTGGGACCCCGCTTTTT |
| *ChrnA5* | Fwd | GGTCTTGCAATCTCTCAGCTAG |
| Rev | TAATACGACTCACTATAGGGCTCATGCACAGCAGCTTGGG |