**Supplementary file 1a.**

|  |  |  |
| --- | --- | --- |
| **Key TF** | **Adjusted *P* value** | **List of overlapped genes** |
| Jun | 0.000114 | Timp1, C1qtnf3, Plaur, Slc39a14, Mmp3, Itga5, Serpine1, Tgfb1, Mmp19, Ccl2, Slc8a1, Plau |
| Smad3 | 0.000399 | Serpine1, Plau, Nedd9, Acta2, Ccl2, Tagln, Enpp1 |
| Msx2 | 0.00464 | Lss, Enpp1, Tagln, Alpl |
| Smad1 | 0.00579 | Runx1, Col4a1, Col4a2, Tnfrsf11b |
| Ppard | 0.00579 | Angptl4, Tgfb1, Insig1 |
| Sp1 | 0.00579 | Acta2, Trf, Serpine1, Plaur, Lgals1, Mgp, Ccl2, Nes, Adcyap1r1, Itga5, Bmp4, Notch1, Skil |
| Fos | 0.0149 | Tgfb1, Bdnf, Tslp, Plau, Pdpn |
| Tgfb1i1 | 0.0149 | Ccl2, Tgfb1 |
| Srf | 0.0185 | Tagln, Barx2, Acta2 |
| Id3 | 0.0298 | Notch1, Alpl |
| Nfkb1 | 0.0298 | Mmp3, Tgfb1, Dmp1, Pla2g4a, Il15, Egr2, Plaur, Ppp1r13l, Ccl2 |
| Junb | 0.034 | Plau, Serpine1 |
| Pparg | 0.034 | Serpine1, Muc1, Angptl4, C1qtnf3 |
| Nfkb2 | 0.0362 | Hif1a, Dmp1 |
| Id1 | 0.0382 | Thbs1, Alpl |
| Runx2 | 0.0382 | Alpl, Mgp, Thbs1, Enpp1 |
| Arntl | 0.0382 | Cxcl5, Bhlhe41 |
| Msx1 | 0.0382 | Tagln, Bmp4 |
| Nr4a2 | 0.0382 | Tnc, Gch1 |
| Ets1 | 0.0388 | Timp1, Mmp3, Ccl2, Bmp4 |
| Prox1 | 0.0465 | Pdpn, Notch1 |
| Bcl3 | 0.0465 | Runx1, Tnfrsf12a |
| Clock | 0.0465 | Serpine1, Bhlhe41 |
| Etv4 | 0.0465 | Mmp3, Plau |

**Supplementary file 1b.**

*(Continued)*

|  |  |  |
| --- | --- | --- |
| **Key TF** | **Adjusted *P* value** | **List of overlapped genes** |
| Nfkb1 | 1.64E-05 | Cxcl10, Tnfsf13b, Cebpa, Apoe, Cxcl1, Il12a, Myc, Vcam1, Tnf, Sox9, Plin2, Rel, Igf2bp2, Birc3, Hmox1, Nfkbiz, Bcl2 |
| Cebpb | 0.000206 | Bcl2, Myc, Mafb, Cebpa, Btg2, Serpine1, Socs3 |
| Sp1 | 0.000206 | Ces1d, Myc, Mgarp, Serpine1, Sirt1, Cebpd, Egr1, Apoe, Cebpa, Slc2a3, Socs3, Adcyap1r1, Tnf, Ar, Lpl, Bmp4, Igfbp3 |
| Dlx5 | 0.000206 | Wnt5a, Alpl, Myc, Igfbp3 |
| Stat3 | 0.000206 | Mt1, Il12a, Pnp, Socs3, Bcl2, Cebpd, Egr1, Tnf, Myc |
| Rela | 0.000206 | Tnfsf13b, Myc, Vcam1, Igf2bp2, Birc3, Pgf, Sox9, Cxcl10, Apoe, Tnf, Bcl2 |
| Stat1 | 0.000336 | Cxcl9, Egr1, Mt1, Socs3, Cebpd, Cxcl10 |
| Id1 | 0.000336 | Thbs1, Alpl, Rel, Tnf |
| Crebbp | 0.000876 | Socs3, Fosb, Tnf, Hmox1, Bcl2, Mt1 |
| Rel | 0.00115 | Cebpd, Birc3, Il12a, Tnf, Myc |
| Jun | 0.00119 | Plin2, Cebpd, Cxcl1, Serpine1, Hmox1, Aldh1a1, Tnf, Sirt1, Socs3, Plau |
| Hnf1b | 0.00135 | Mafb, Pde4c, Socs3 |
| Hif1a | 0.00324 | Mt1, Cited2, Hmox1, Serpine1 |
| Tfap2a | 0.00381 | Apoe, Cebpa, Meis1 |
| Trp53 | 0.00595 | Btg2, Thbs1, Hmox1, Bcl2, Mt1, Agtr1a, Myc, Serpine1, Egr1, Pappa |
| Ikbkb | 0.00595 | Cxcl9, Cxcl10, Tnf |
| Epas1 | 0.00678 | Serpine1, Cited2, Vcam1 |
| Ppara | 0.00678 | Cebpa, Lpl, Cebpd, Serpine1, Bcl2 |
| Twist1 | 0.00781 | Fgf10, Sox9, Tnf, Mme |
| Smad3 | 0.00809 | Serpine1, Plau, Sirt1, Tnfsf13b, Myc |
| Bcl3 | 0.00899 | Tnf, Cxcl10, Ubc |
| Atf2 | 0.0104 | Sox9, Cebpa, Tnf |
| Fos | 0.0127 | Socs3, Tslp, Mt1, Plau, Egr1 |
| Etv2 | 0.0146 | Sox9, Plau |
| Mtf1 | 0.0146 | Pgf, Mt1 |
| Rbl1 | 0.0146 | Myc, Alpl |
| Ctnnb1 | 0.0167 | Bmp4, Isl1, Myc, Tbx3, Gja1 |
| Elk1 | 0.0181 | Hmox1, Egr1 |
| Fosl1 | 0.0181 | Thbs1, Thbs2 |
| Dnmt3a | 0.0209 | Vtn, Mt1 |
| Foxg1 | 0.0209 | Ebf3, Serpine1 |
| Id3 | 0.0209 | Vcam1, Alpl |
| Tbx1 | 0.0209 | Ripply3, Fgf10 |
| Egr1 | 0.0225 | Tnf, Serpine1, Thbs1, Nr4a1, Il12a |
| Irf1 | 0.0225 | Cxcl10, Il12a, Tnf |
| Foxo3 | 0.0225 | Socs3, Sirt1 |
| Gfi1b | 0.0225 | Meis1, Socs3 |
| Junb | 0.0225 | Plau, Serpine1 |
| Ncoa3 | 0.0225 | Igfbp3, Tbx3 |
| Foxo1 | 0.0242 | Bcl2l11, Egr1, Lpl, Alpl |
| Myc | 0.0242 | Myc, Cebpd, Bcl2, Zfp36 |
| Pparg | 0.0246 | Serpine1, Plin2, Egr1, Hmox1 |
| Nfkb2 | 0.0246 | Myc, Rel |
| Nr4a1 | 0.0246 | Serpine1, Ar |
| Nfe2l2 | 0.0278 | Bcl2, Hmox1, Sult1e1, Mt1 |
| Id2 | 0.0278 | Alpl, Zbtb16 |
| Klf5 | 0.0278 | Egr1, Serpine1 |
| Creb1 | 0.0312 | Bcl2, Nfkbiz, Slc2a3 |
| Runx2 | 0.0336 | Alpl, Thbs1, Hbegf, Sox9 |
| Ets1 | 0.0369 | Egr1, Hmox1, Nr2f1, Bmp4 |
| Ep300 | 0.0382 | Tnfsf13b, Mt1, Hmox1, Socs3 |
| Usf2 | 0.04 | Hmox1, Mt1 |
| Mecp2 | 0.0496 | Slc2a3, Igfbp3 |
| Stat6 | 0.0496 | Tnf, Egr1 |

**Supplementary file 1c.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Gene** | **Secreted** | **GO term related to neuron/glial cell regulation** | **Exclusive expression in activated FAPs** |
| **Bdnf** | **O** | **O** | **O** |
| **Apoe** | **O** | **O** | **X** |
| **Ccl2** | **O** | **O** | **X** |
| **Tgfb1** | **O** | **O** | **X** |
| **Tnf** | **O** | **O** | **X** |
| **Vcam1** | **O** | **O** | **X** |
| **Dmp1** | **O** | **X** | **O** |
| **C1qtnf3** | **O** | **X** | **X** |
| **Cxcl1** | **O** | **X** | **X** |
| **Cxcl10** | **O** | **X** | **X** |
| **Il12a** | **O** | **X** | **X** |
| **Il15** | **O** | **X** | **X** |
| **Mmp19** | **O** | **X** | **X** |
| **Mmp3** | **O** | **X** | **X** |
| **Plau** | **O** | **X** | **X** |
| **Plaur** | **O** | **X** | **X** |
| **Serpine1** | **O** | **X** | **X** |
| **Timp1** | **O** | **X** | **X** |
| **Tnfsf13b** | **O** | **X** | **X** |
| **Tslp** | **O** | **X** | **X** |
| **Bcl2** | **X** | **O** | **X** |
| **Egr1** | **X** | **O** | **X** |
| **Egr2** | **X** | **O** | **X** |
| **Hif1a** | **X** | **O** | **X** |
| **Hmox1** | **X** | **O** | **X** |
| **Igf2bp2** | **X** | **O** | **X** |
| **Mt1** | **X** | **O** | **X** |
| **Myc** | **X** | **O** | **X** |
| **Rel** | **X** | **O** | **X** |
| **Sirt1** | **X** | **O** | **X** |
| **Sox9** | **X** | **O** | **X** |
| **Aldh1a1** | **X** | **X** | **X** |
| **Birc3** | **X** | **X** | **X** |
| **Cebpa** | **X** | **X** | **X** |
| **Cebpd** | **X** | **X** | **X** |
| **Itga5** | **X** | **X** | **X** |
| **Nfkbiz** | **X** | **X** | **X** |
| **Pdpn** | **X** | **X** | **X** |
| **Pla2g4a** | **X** | **X** | **X** |
| **Plin2** | **X** | **X** | **X** |
| **Ppp1r13l** | **X** | **X** | **X** |
| **Slc39a14** | **X** | **X** | **X** |
| **Slc8a1** | **X** | **X** | **X** |
| **Socs3** | **X** | **X** | **X** |

**Supplementary file 1d.**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Primer** | **Usage** | **Sequence (5' to 3')** |
| 1 | Prrx1Cre\_com\_R (P1) | Genotyping PCR | TAG TGA AGT GGA AGT TCC TGG |
| 2 | Prrx1Cre\_WT\_F (P2) | Genotyping PCR | CAG TTC CTA CCC TGA TTT CC |
| 3 | Prrx1Cre\_Tg\_F (P3) | Genotyping PCR | GAT CAT AAT CAG CCA TAC CAC |
| 4 | Bdnf\_flox\_F (P4) | Genotyping PCR | TGT GAT TGT GTT TCT GGT GAC |
| 5 | Bdnf\_flox\_R (P5) | Genotyping PCR | CGG TTT CTA AGC AAG TGA ACA |
| 6 | Bdnf\_recomb\_R (P6) | Genotyping PCR | GAA ATT TTC TCC ATC CCT ACT CCG GG |
| 7 | Cre\_F | Genotyping PCR | GCA TTA CCG GTC GAT GCA ACG AGT GAT GAG |
| 8 | Cre\_R | Genotyping PCR | GAG TGA ACG AAC CTG GTC GAA ATC AGT GCG |
| 9 | Rosa-tdT\_WT\_F | Genotyping PCR | AAG GGA GCT GCA GTG GAG TA  |
| 10 | Rosa-tdT\_WT\_R | Genotyping PCR | CCG AAA ATC TGT GGG AAG TC  |
| 11 | Rosa-tdT\_Tg\_F | Genotyping PCR | GGC ATT AAA GCA GCG TAT CC  |
| 12 | Rosa-tdT\_Tg\_R | Genotyping PCR | CTG TTC CTG TAC GGC ATG G  |
| 13 | Actb\_qF | RT-qPCR | CCT CCC TGG AGA AGA GCT ATG |
| 14 | Actb\_qR | RT-qPCR | TTA CGG ATG TCA ACG TCA CAC |
| 15 | Ret\_qF | RT-qPCR | CCA GGG CTT CCC AAT CAG TT |
| 16 | Ret\_qR | RT-qPCR | TTC CAA ACT CGC CTT CTC CC |
| 17 | Gfra1\_qF | RT-qPCR | CAC TCC TGG ATT TGC TGA TGT |
| 18 | Gfra1\_qR | RT-qPCR | AGT GTG CGG TAC TTG GTG C |
| 19 | Gdnf\_qF | RT-qPCR | TCG GCC GAG ACA ATG TAT GA |
| 20 | Gdnf\_qR | RT-qPCR | CAA CAT GCC TGG CCT ACT TTG |
| 21 | Bdnf\_qF | RT-qPCR | AAG GAC GCG GAC TTG TAC AC |
| 22 | Bdnf\_qR | RT-qPCR | CGC TAA TAC TGT CAC ACA CGC |