

Supplementary materials

Table S1 Regulatory network definition of edge and node by Cytoscape. In the third column ‘Up/Dn’, ‘+’ indicates the corresponding gene in the first columns is up-regulated, while ‘_’ indicates down-regulation. The number in the column ‘Group’ indicates the group, with 1 for up-regulated genes, -1 for down-regulated genes, -2 for hub TFs, and 2 for TCF7L2

| Edge | | | Node | |
|------------|------------|-------|----------|-------|
| Name_Node1 | Name_Node2 | Up/Dn | Name | Group |
| ARSB | CAD | + | ARSB | 1 |
| COL5A1 | CAD | + | ATP7B | 1 |
| GALC | CAD | + | COL5A1 | 1 |
| ITGA6 | CAD | + | GALC | 1 |
| THBD | CAD | + | ITGA6 | 1 |
| COL5A2 | CAD | + | TGFBI | 1 |
| APP | CAD | + | THBD | 1 |
| CXCL12 | CAD | + | CDKN1A | 1 |
| CYP24A1 | CAD | + | COL5A2 | 1 |
| MAOB | CAD | + | EXT2 | 1 |
| PAM | CAD | + | APP | 1 |
| PRLR | CAD | + | CXCL12 | 1 |
| ATP2B1 | CAD | + | LTBP1 | 1 |
| SERPINA1 | CAD | + | CYP24A1 | 1 |
| MGLL | CAD | + | MAOB | 1 |
| TULP4 | CAD | + | NPR3 | 1 |
| ANO6 | CAD | + | PAM | 1 |
| VEGFA | CAD | + | PPP3CA | 1 |
| GPR126 | CAD | + | PRLR | 1 |
| MAP2 | CAD | + | ATP2B1 | 1 |
| EDN1 | CAD | + | SERPINA1 | 1 |

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| <i>Edge</i> | | | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| FN1 | CAD | + | MGLL | 1 |
| INHBA | CAD | + | TULP4 | 1 |
| ITGB1 | CAD | + | SHISA2 | 1 |
| NT5E | CAD | + | ANO6 | 1 |
| PTK7 | CAD | + | VEGFA | 1 |
| RBMS1 | CAD | + | GPR126 | 1 |
| SORL1 | CAD | + | NPNT | 1 |
| STC1 | CAD | + | CYFIP2 | 1 |
| YWHAZ | CAD | + | FHL2 | 1 |
| DYRK2 | CAD | + | MAP2 | 1 |
| ENC1 | CAD | + | HIPK3 | 1 |
| WISP2 | CAD | + | BMPR2 | 1 |
| ASPH | CAD | + | CDK8 | 1 |
| EPHA4 | CAD | + | DGKA | 1 |
| RPS6KA3 | CAD | + | DDX3X | 1 |
| ANXA3 | CAD | + | CAPN2 | 1 |
| RND3 | CAD | + | SLC31A2 | 1 |
| LMO7 | CAD | + | EDN1 | 1 |
| PTPN14 | CAD | + | FN1 | 1 |
| MAFB | CAD | + | FRK | 1 |
| ABCA1 | CAD | + | GOLGA4 | 1 |
| LHFPL2 | CAD | + | INHBA | 1 |
| ZNF193 | CAD | + | ITGB1 | 1 |
| NEBL | CAD | + | LAMC1 | 1 |
| TRIM16 | CAD | + | LRP1 | 1 |
| RAB31 | CAD | + | NT5E | 1 |
| SLC35D2 | CAD | + | PDE7A | 1 |
| PTPN21 | CAD | + | KLK6 | 1 |
| DDAH1 | CAD | + | PTK7 | 1 |
| MGAT4A | CAD | + | RBMS1 | 1 |
| LPHN2 | CAD | + | SORL1 | 1 |
| C1orf9 | CAD | + | SOX4 | 1 |

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| <i>Edge</i> | | <i>Node</i> | | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| TNFRSF21 | CAD | + | STC1 | 1 |
| LMCD1 | CAD | + | YWHAZ | 1 |
| SECISBP2L | CAD | + | DYRK2 | 1 |
| RHOBTB3 | CAD | + | ENC1 | 1 |
| CPEB3 | CAD | + | WISP2 | 1 |
| ABLIM3 | CAD | + | GPRC5A | 1 |
| NMNAT2 | CAD | + | STX3 | 1 |
| KANK1 | CAD | + | ASPH | 1 |
| ABCA12 | CAD | + | COL12A1 | 1 |
| NBEA | CAD | + | EPHA4 | 1 |
| RRM2B | CAD | + | RPS6KA3 | 1 |
| FAM49B | CAD | + | MAP4K4 | 1 |
| FIGN | CAD | + | GDF15 | 1 |
| STRADB | CAD | + | ANXA3 | 1 |
| ERRFI1 | CAD | + | RND3 | 1 |
| PTGFRN | CAD | + | ELK3 | 1 |
| SEMA6A | CAD | + | LMO7 | 1 |
| VAT1L | CAD | + | PTPN14 | 1 |
| CFL2 | CAD | + | MAFB | 1 |
| SUSD1 | CAD | + | ABCA1 | 1 |
| GPR87 | CAD | + | LAMC2 | 1 |
| DLC1 | CAD | + | LHFPL2 | 1 |
| ADPGK | CAD | + | MAP1B | 1 |
| HOOK3 | CAD | + | DLC1 | 1 |
| LCOR | CAD | + | PCP4 | 1 |
| CCND1 | CAD | + | ZNF193 | 1 |
| ITGB1 | CAD | + | NEBL | 1 |
| GLCCI1 | CAD | + | TRIM16 | 1 |
| TMEM45B | CAD | + | BTG2 | 1 |
| MBNL2 | CAD | + | RAB31 | 1 |
| BTBD9 | CAD | + | SLC35D2 | 1 |
| TES | CAD | + | PTPN21 | 1 |

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| <i>Edge</i> | | | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| KANK1 | CAD | + | UBL3 | 1 |
| ABCA12 | CAD | + | DDAH1 | 1 |
| PGM2L1 | CAD | + | MGAT4A | 1 |
| JAZF1 | CAD | + | LPHN2 | 1 |
| LONRF2 | CAD | + | SOCS5 | 1 |
| ARSB | CAD | + | KSR1 | 1 |
| DOCK8 | CAD | + | C1orf9 | 1 |
| FREM2 | CAD | + | LYPD3 | 1 |
| ARSB | FOXO1 | + | TNFRSF21 | 1 |
| ATP7B | FOXO1 | + | SESN1 | 1 |
| COL5A1 | FOXO1 | + | TNRC6A | 1 |
| ITGA6 | FOXO1 | + | LMCD1 | 1 |
| TGFB1 | FOXO1 | + | SECISBP2L | 1 |
| THBD | FOXO1 | + | RHOBTB3 | 1 |
| CDKN1A | FOXO1 | + | CPEB3 | 1 |
| COL5A2 | FOXO1 | + | ABLIM3 | 1 |
| EXT2 | FOXO1 | + | PHLPP2 | 1 |
| APP | FOXO1 | + | NMNAT2 | 1 |
| LTBP1 | FOXO1 | + | KANK1 | 1 |
| CYP24A1 | FOXO1 | + | TES | 1 |
| MAOB | FOXO1 | + | ABCA12 | 1 |
| NPR3 | FOXO1 | + | NBEA | 1 |
| PAM | FOXO1 | + | RRM2B | 1 |
| PPP3CA | FOXO1 | + | C1orf9 | 1 |
| PRLR | FOXO1 | + | FAM49B | 1 |
| ATP2B1 | FOXO1 | + | FIGN | 1 |
| SERPINA1 | FOXO1 | + | STRADB | 1 |
| MGLL | FOXO1 | + | ERRFI1 | 1 |
| SHISA2 | FOXO1 | + | PTGFRN | 1 |
| ANO6 | FOXO1 | + | SEMA6A | 1 |
| VEGFA | FOXO1 | + | VAT1L | 1 |
| GPR126 | FOXO1 | + | CLDN1 | 1 |

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| <i>Edge</i> | | <i>Node</i> | | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| FHL2 | FOXO1 | + | CFL2 | 1 |
| MAP2 | FOXO1 | + | SUSD1 | 1 |
| HIPK3 | FOXO1 | + | TNS3 | 1 |
| BMPR2 | FOXO1 | + | AEN | 1 |
| CDK8 | FOXO1 | + | RNF38 | 1 |
| DDX3X | FOXO1 | + | OTUB2 | 1 |
| CAPN2 | FOXO1 | + | GPR87 | 1 |
| SLC31A2 | FOXO1 | + | DLC1 | 1 |
| EDN1 | FOXO1 | + | FRAS1 | 1 |
| FRK | FOXO1 | + | DICER1 | 1 |
| GOLGA4 | FOXO1 | + | ADPGK | 1 |
| ITGB1 | FOXO1 | + | C9orf5 | 1 |
| LAMC1 | FOXO1 | + | HOOK3 | 1 |
| NT5E | FOXO1 | + | LCOR | 1 |
| PDE7A | FOXO1 | + | KBTBD8 | 1 |
| PTK7 | FOXO1 | + | PLEKHA8 | 1 |
| RBMS1 | FOXO1 | + | STON2 | 1 |
| STC1 | FOXO1 | + | CCND1 | 1 |
| YWHAZ | FOXO1 | + | FN1 | 1 |
| DYRK2 | FOXO1 | + | ITGB1 | 1 |
| ENC1 | FOXO1 | + | GLCCI1 | 1 |
| WISP2 | FOXO1 | + | CFL2 | 1 |
| GPRC5A | FOXO1 | + | TMEM45B | 1 |
| STX3 | FOXO1 | + | RNF145 | 1 |
| ASPH | FOXO1 | + | MBNL2 | 1 |
| COL12A1 | FOXO1 | + | DCP2 | 1 |
| EPHA4 | FOXO1 | + | BTBD9 | 1 |
| RPS6KA3 | FOXO1 | + | TES | 1 |
| MAP4K4 | FOXO1 | + | KANK1 | 1 |
| GDF15 | FOXO1 | + | ABCA12 | 1 |
| ANXA3 | FOXO1 | + | PGM2L1 | 1 |
| RND3 | FOXO1 | + | JAZF1 | 1 |

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| <i>Edge</i> | | <i>Node</i> | | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| ELK3 | FOXO1 | + | DICER1 | 1 |
| LMO7 | FOXO1 | + | PAQR7 | 1 |
| PTPN14 | FOXO1 | + | DLC1 | 1 |
| ABCA1 | FOXO1 | + | RNF38 | 1 |
| LHFPL2 | FOXO1 | + | LONRF2 | 1 |
| DLC1 | FOXO1 | + | ARSB | 1 |
| NEBL | FOXO1 | + | C2CD2 | 1 |
| TRIM16 | FOXO1 | + | FHL2 | 1 |
| BTG2 | FOXO1 | + | DOCK8 | 1 |
| RAB31 | FOXO1 | + | LTBP1 | 1 |
| SLC35D2 | FOXO1 | + | FREM2 | 1 |
| PTPN21 | FOXO1 | + | CAD | -2 |
| UBL3 | FOXO1 | + | FOXO1 | -2 |
| DDAH1 | FOXO1 | + | GATA3 | -2 |
| MGAT4A | FOXO1 | + | TCF7L2 | 2 |
| LPHN2 | FOXO1 | + | FBP1 | -1 |
| SOCSS5 | FOXO1 | + | BLVRB | -1 |
| KSR1 | FOXO1 | + | CRAT | -1 |
| C1orf9 | FOXO1 | + | RPL37 | -1 |
| LYPD3 | FOXO1 | + | RPL38 | -1 |
| SESN1 | FOXO1 | + | RPLP1 | -1 |
| TNRC6A | FOXO1 | + | ATP8B2 | -1 |
| LMCD1 | FOXO1 | + | DBNL | -1 |
| SECISBP2L | FOXO1 | + | ERGIC1 | -1 |
| RHOBTB3 | FOXO1 | + | ABR | -1 |
| CPEB3 | FOXO1 | + | GMDS | -1 |
| ABLIM3 | FOXO1 | + | DDR1 | -1 |
| PHLPP2 | FOXO1 | + | MYBL2 | -1 |
| NMNAT2 | FOXO1 | + | SAT1 | -1 |
| KANK1 | FOXO1 | + | TFF1 | -1 |
| TES | FOXO1 | + | TPD52L2 | - |
| NBEA | FOXO1 | + | UNG | -1 |

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| Edge | | Node | | |
|------------|------------|-------|----------|-------|
| Name_Node1 | Name_Node2 | Up/Dn | Name | Group |
| C1orf9 | FOXO1 | + | NR5A2 | -1 |
| FAM49B | FOXO1 | + | IER3 | -1 |
| FIGN | FOXO1 | + | CSRP1 | -1 |
| STRADB | FOXO1 | + | PKMYT1 | -1 |
| ERRFI1 | FOXO1 | + | FKBP2 | -1 |
| PTGFRN | FOXO1 | + | NDUFB10 | -1 |
| SEMA6A | FOXO1 | + | MB | -1 |
| VAT1L | FOXO1 | + | SFN | -1 |
| CLDN1 | FOXO1 | + | POLR2I | -1 |
| CFL2 | FOXO1 | + | AGPAT1 | -1 |
| SUSD1 | FOXO1 | + | STARD10 | -1 |
| TNS3 | FOXO1 | + | HNRNPUL1 | -1 |
| AEN | FOXO1 | + | RPL35 | -1 |
| OTUB2 | FOXO1 | + | BRCA1 | -1 |
| GPR87 | FOXO1 | + | EPB41L1 | -1 |
| DLC1 | FOXO1 | + | KEAP1 | -1 |
| DICER1 | FOXO1 | + | SPDEF | -1 |
| C9orf5 | FOXO1 | + | SSBP2 | -1 |
| LCOR | FOXO1 | + | MYO16 | -1 |
| KBTBD8 | FOXO1 | + | ARL6IP1 | -1 |
| PLEKHA8 | FOXO1 | + | YBX2 | -1 |
| STON2 | FOXO1 | + | DCXR | -1 |
| FN1 | FOXO1 | + | TREX1 | -1 |
| ITGB1 | FOXO1 | + | C17orf59 | -1 |
| GLCCI1 | FOXO1 | + | SLC35C1 | -1 |
| CFL2 | FOXO1 | + | ATP8B2 | -1 |
| TMEM45B | FOXO1 | + | ZFAND3 | -1 |
| RNF145 | FOXO1 | + | GGCT | -1 |
| MBNL2 | FOXO1 | + | GALNT12 | -1 |
| DCP2 | FOXO1 | + | ADCK4 | -1 |
| TES | FOXO1 | + | C10orf81 | -1 |
| KANK1 | FOXO1 | + | SLC37A3 | -1 |

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| <i>Edge</i> | | | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| ABCA12 | FOXO1 | + | AGPAT1 | -1 |
| PGM2L1 | FOXO1 | + | C19orf33 | -1 |
| JAZF1 | FOXO1 | + | SLC44A1 | -1 |
| DLC1 | FOXO1 | + | HNRNPUL1 | -1 |
| LONRF2 | FOXO1 | + | PKHD1L1 | -1 |
| ARSB | FOXO1 | + | H2AFJ | -1 |
| C2CD2 | FOXO1 | + | NUDT1 | -1 |
| FHL2 | FOXO1 | + | ABCG1 | -1 |
| DOCK8 | FOXO1 | + | AP1 | -2 |
| LTBP1 | FOXO1 | + | AP2A | -2 |
| FREM2 | FOXO1 | + | PBF | -2 |
| ARSB | GATA3 | + | | |
| COL5A1 | GATA3 | + | | |
| GALC | GATA3 | + | | |
| ITGA6 | GATA3 | + | | |
| TGFBI | GATA3 | + | | |
| THBD | GATA3 | + | | |
| CDKN1A | GATA3 | + | | |
| COL5A2 | GATA3 | + | | |
| EXT2 | GATA3 | + | | |
| APP | GATA3 | + | | |
| CXCL12 | GATA3 | + | | |
| LTBP1 | GATA3 | + | | |
| CYP24A1 | GATA3 | + | | |
| MAOB | GATA3 | + | | |
| PAM | GATA3 | + | | |
| PPP3CA | GATA3 | + | | |
| PRLR | GATA3 | + | | |
| ATP2B1 | GATA3 | + | | |
| MGLL | GATA3 | + | | |
| TULP4 | GATA3 | + | | |
| ANO6 | GATA3 | + | | |

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| <i>Edge</i> | | | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| GPR126 | GATA3 | + | | |
| NPNT | GATA3 | + | | |
| CYFIP2 | GATA3 | + | | |
| FHL2 | GATA3 | + | | |
| MAP2 | GATA3 | + | | |
| BMPR2 | GATA3 | + | | |
| DDX3X | GATA3 | + | | |
| CAPN2 | GATA3 | + | | |
| SLC31A2 | GATA3 | + | | |
| EDN1 | GATA3 | + | | |
| FN1 | GATA3 | + | | |
| FRK | GATA3 | + | | |
| ITGB1 | GATA3 | + | | |
| LAMC1 | GATA3 | + | | |
| LRP1 | GATA3 | + | | |
| NT5E | GATA3 | + | | |
| PDE7A | GATA3 | + | | |
| RBMS1 | GATA3 | + | | |
| SORL1 | GATA3 | + | | |
| STC1 | GATA3 | + | | |
| YWHAZ | GATA3 | + | | |
| DYRK2 | GATA3 | + | | |
| ENC1 | GATA3 | + | | |
| WISP2 | GATA3 | + | | |
| GPRC5A | GATA3 | + | | |
| STX3 | GATA3 | + | | |
| ASPH | GATA3 | + | | |
| COL12A1 | GATA3 | + | | |
| EPHA4 | GATA3 | + | | |
| RPS6KA3 | GATA3 | + | | |
| ANXA3 | GATA3 | + | | |
| RND3 | GATA3 | + | | |

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| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Edge</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Node</i> |
|-------------------|-------------------|-------------|--------------|-------------|--------------|
| | | | | | <i>Group</i> |
| ELK3 | GATA3 | | + | | |
| LMO7 | GATA3 | | + | | |
| PTPN14 | GATA3 | | + | | |
| MAFB | GATA3 | | + | | |
| ABCA1 | GATA3 | | + | | |
| LAMC2 | GATA3 | | + | | |
| LHFPL2 | GATA3 | | + | | |
| MAP1B | GATA3 | | + | | |
| DLC1 | GATA3 | | + | | |
| NEBL | GATA3 | | + | | |
| TRIM16 | GATA3 | | + | | |
| BTG2 | GATA3 | | + | | |
| RAB31 | GATA3 | | + | | |
| SLC35D2 | GATA3 | | + | | |
| PTPN21 | GATA3 | | + | | |
| UBL3 | GATA3 | | + | | |
| MGAT4A | GATA3 | | + | | |
| LPHN2 | GATA3 | | + | | |
| SOCS5 | GATA3 | | + | | |
| KSR1 | GATA3 | | + | | |
| C1orf9 | GATA3 | | + | | |
| LYPD3 | GATA3 | | + | | |
| TNFRSF21 | GATA3 | | + | | |
| SESN1 | GATA3 | | + | | |
| TNRC6A | GATA3 | | + | | |
| LMCD1 | GATA3 | | + | | |
| SECISBP2L | GATA3 | | + | | |
| RHOBTB3 | GATA3 | | + | | |
| CPEB3 | GATA3 | | + | | |
| ABLIM3 | GATA3 | | + | | |
| PHLPP2 | GATA3 | | + | | |
| NMNAT2 | GATA3 | | + | | |

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| <i>Edge</i> | | | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| KANK1 | GATA3 | + | | |
| TES | GATA3 | + | | |
| ABCA12 | GATA3 | + | | |
| NBEA | GATA3 | + | | |
| FAM49B | GATA3 | + | | |
| FIGN | GATA3 | + | | |
| STRADB | GATA3 | + | | |
| ERRFI1 | GATA3 | + | | |
| PTGFRN | GATA3 | + | | |
| SEMA6A | GATA3 | + | | |
| CLDN1 | GATA3 | + | | |
| CFL2 | GATA3 | + | | |
| SUSD1 | GATA3 | + | | |
| TNS3 | GATA3 | + | | |
| AEN | GATA3 | + | | |
| OTUB2 | GATA3 | + | | |
| DLC1 | GATA3 | + | | |
| C9orf5 | GATA3 | + | | |
| LCOR | GATA3 | + | | |
| PLEKHA8 | GATA3 | + | | |
| STON2 | GATA3 | + | | |
| CCND1 | GATA3 | + | | |
| FN1 | GATA3 | + | | |
| ITGB1 | GATA3 | + | | |
| GLCCI1 | GATA3 | + | | |
| CFL2 | GATA3 | + | | |
| RNF145 | GATA3 | + | | |
| MBNL2 | GATA3 | + | | |
| BTBD9 | GATA3 | + | | |
| TES | GATA3 | + | | |
| KANK1 | GATA3 | + | | |
| ABCA12 | GATA3 | + | | |

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| <i>Edge</i> | | | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| PGM2L1 | GATA3 | + | | |
| JAZF1 | GATA3 | + | | |
| PAQR7 | GATA3 | + | | |
| DLC1 | GATA3 | + | | |
| LONRF2 | GATA3 | + | | |
| FHL2 | GATA3 | + | | |
| LTBP1 | GATA3 | + | | |
| FREM2 | GATA3 | + | | |
| ITGA6 | TCF7L2 | + | | |
| TGFB1 | TCF7L2 | + | | |
| THBD | TCF7L2 | + | | |
| CDKN1A | TCF7L2 | + | | |
| COL5A2 | TCF7L2 | + | | |
| EXT2 | TCF7L2 | + | | |
| APP | TCF7L2 | + | | |
| CXCL12 | TCF7L2 | + | | |
| LTBP1 | TCF7L2 | + | | |
| CYP24A1 | TCF7L2 | + | | |
| MAOB | TCF7L2 | + | | |
| NPR3 | TCF7L2 | + | | |
| PAM | TCF7L2 | + | | |
| PPP3CA | TCF7L2 | + | | |
| PRLR | TCF7L2 | + | | |
| SERPINA1 | TCF7L2 | + | | |
| MGLL | TCF7L2 | + | | |
| TULP4 | TCF7L2 | + | | |
| SHISA2 | TCF7L2 | + | | |
| VEGFA | TCF7L2 | + | | |
| GPR126 | TCF7L2 | + | | |
| CYFIP2 | TCF7L2 | + | | |
| FHL2 | TCF7L2 | + | | |
| HIPK3 | TCF7L2 | + | | |

Table S1 Regulatory network definition of edge and node by Cytoscape. In the third column ‘Up/Dn’, ‘+’ indicates the corresponding gene in the first columns is up-regulated, while ‘_’ indicates down-regulation. The number in the column ‘Group’ indicates the group, with 1 for up-regulated genes, -1 for down-regulated genes, -2 for hub TFs, and 2 for TCF7L2 (continued)

| <i>Edge</i> | | | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| BMPR2 | TCF7L2 | + | | |
| CDK8 | TCF7L2 | + | | |
| DDX3X | TCF7L2 | + | | |
| SLC31A2 | TCF7L2 | + | | |
| EDN1 | TCF7L2 | + | | |
| FN1 | TCF7L2 | + | | |
| FRK | TCF7L2 | + | | |
| ITGB1 | TCF7L2 | + | | |
| LAMC1 | TCF7L2 | + | | |
| LRP1 | TCF7L2 | + | | |
| NT5E | TCF7L2 | + | | |
| PDE7A | TCF7L2 | + | | |
| PTK7 | TCF7L2 | + | | |
| RBMS1 | TCF7L2 | + | | |
| SORL1 | TCF7L2 | + | | |
| DYRK2 | TCF7L2 | + | | |
| ENC1 | TCF7L2 | + | | |
| GPRC5A | TCF7L2 | + | | |
| STX3 | TCF7L2 | + | | |
| ASPH | TCF7L2 | + | | |
| COL12A1 | TCF7L2 | + | | |
| EPHA4 | TCF7L2 | + | | |
| RPS6KA3 | TCF7L2 | + | | |
| MAP4K4 | TCF7L2 | + | | |
| RND3 | TCF7L2 | + | | |
| LMO7 | TCF7L2 | + | | |
| PTPN14 | TCF7L2 | + | | |
| ABCA1 | TCF7L2 | + | | |
| LAMC2 | TCF7L2 | + | | |
| LHFPL2 | TCF7L2 | + | | |
| DLC1 | TCF7L2 | + | | |
| PCP4 | TCF7L2 | + | | |

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| <i>Edge</i> | | <i>Up/Dn</i> | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | | <i>Name</i> | <i>Group</i> |
| NEBL | TCF7L2 | + | | |
| BTG2 | TCF7L2 | + | | |
| RAB31 | TCF7L2 | + | | |
| SLC35D2 | TCF7L2 | + | | |
| PTPN21 | TCF7L2 | + | | |
| UBL3 | TCF7L2 | + | | |
| DDAH1 | TCF7L2 | + | | |
| MGAT4A | TCF7L2 | + | | |
| LPHN2 | TCF7L2 | + | | |
| SOC5S | TCF7L2 | + | | |
| KSR1 | TCF7L2 | + | | |
| C1orf9 | TCF7L2 | + | | |
| TNFRSF21 | TCF7L2 | + | | |
| SESN1 | TCF7L2 | + | | |
| LMCD1 | TCF7L2 | + | | |
| RHOBTB3 | TCF7L2 | + | | |
| PHLPP2 | TCF7L2 | + | | |
| KANK1 | TCF7L2 | + | | |
| NBEA | TCF7L2 | + | | |
| RRM2B | TCF7L2 | + | | |
| FAM49B | TCF7L2 | + | | |
| FIGN | TCF7L2 | + | | |
| STRADB | TCF7L2 | + | | |
| PTGFRN | TCF7L2 | + | | |
| SEMA6A | TCF7L2 | + | | |
| VAT1L | TCF7L2 | + | | |
| CLDN1 | TCF7L2 | + | | |
| SUSD1 | TCF7L2 | + | | |
| TNS3 | TCF7L2 | + | | |
| AEN | TCF7L2 | + | | |
| ADPGK | TCF7L2 | + | | |
| C9orf5 | TCF7L2 | + | | |

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| <i>Edge</i> | | <i>Up/Dn</i> | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | | <i>Name</i> | <i>Group</i> |
| KBTBD8 | TCF7L2 | + | | |
| PLEKHA8 | TCF7L2 | + | | |
| STON2 | TCF7L2 | + | | |
| ITGB1 | TCF7L2 | + | | |
| GLCCI1 | TCF7L2 | + | | |
| RNF145 | TCF7L2 | + | | |
| MBNL2 | TCF7L2 | + | | |
| DCP2 | TCF7L2 | + | | |
| TES | TCF7L2 | + | | |
| JAZF1 | TCF7L2 | + | | |
| DLC1 | TCF7L2 | + | | |
| RNF38 | TCF7L2 | + | | |
| LONRF2 | TCF7L2 | + | | |
| FHL2 | TCF7L2 | + | | |
| DOCK8 | TCF7L2 | + | | |
| LTBP1 | TCF7L2 | + | | |
| FREM2 | TCF7L2 | + | | |
| FBP1 | AP1 | - | | |
| BLVRB | AP1 | - | | |
| CRAT | AP1 | - | | |
| RPL38 | AP1 | - | | |
| RPLP1 | AP1 | - | | |
| ATP8B2 | AP1 | - | | |
| DBNL | AP1 | - | | |
| ERGIC1 | AP1 | - | | |
| ABR | AP1 | - | | |
| GMDS | AP1 | - | | |
| DDR1 | AP1 | - | | |
| MYBL2 | AP1 | - | | |
| SAT1 | AP1 | - | | |
| TFF1 | AP1 | - | | |
| TPD52L2 | AP1 | - | | |

Table S1 Regulatory network definition of edge and node by Cytoscape. In the third column ‘Up/Dn’, ‘+’ indicates the corresponding gene in the first columns is up-regulated, while ‘_’ indicates down-regulation. The number in the column ‘Group’ indicates the group, with 1 for up-regulated genes, -1 for down-regulated genes, -2 for hub TFs, and 2 for TCF7L2 (continued)

| <i>Edge</i> | | | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| UNG | AP1 | - | | |
| NR5A2 | AP1 | - | | |
| IER3 | AP1 | - | | |
| CSRP1 | AP1 | - | | |
| PKMYT1 | AP1 | - | | |
| FKBP2 | AP1 | - | | |
| MB | AP1 | - | | |
| AGPAT1 | AP1 | - | | |
| STARD10 | AP1 | - | | |
| RPL35 | AP1 | - | | |
| EPB41L1 | AP1 | - | | |
| SSBP2 | AP1 | - | | |
| MYO16 | AP1 | - | | |
| ARL6IP1 | AP1 | - | | |
| DCXR | AP1 | - | | |
| ZFAND3 | AP1 | - | | |
| ADCK4 | AP1 | - | | |
| SLC37A3 | AP1 | - | | |
| AGPAT1 | AP1 | - | | |
| C19orf33 | AP1 | - | | |
| HNRPNUL1 | AP1 | - | | |
| PKHD1L1 | AP1 | - | | |
| ABCG1 | AP1 | - | | |
| RPL37 | AP2A | - | | |
| RPL38 | AP2A | - | | |
| RPLP1 | AP2A | - | | |
| ATP8B2 | AP2A | - | | |
| DBNL | AP2A | - | | |
| ERGIC1 | AP2A | - | | |
| ABR | AP2A | - | | |
| DDR1 | AP2A | - | | |
| MYBL2 | AP2A | - | | |

Table S1 Regulatory network definition of edge and node by Cytoscape. In the third column ‘Up/Dn’, ‘+’ indicates the corresponding gene in the first columns is up-regulated, while ‘_’ indicates down-regulation. The number in the column ‘Group’ indicates the group, with 1 for up-regulated genes, -1 for down-regulated genes, -2 for hub TFs, and 2 for TCF7L2 (continued)

| <i>Edge</i> | | | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | <i>Up/Dn</i> | <i>Name</i> | <i>Group</i> |
| SAT1 | AP2A | - | | |
| TFF1 | AP2A | - | | |
| TPD52L2 | AP2A | - | | |
| UNG | AP2A | - | | |
| IER3 | AP2A | - | | |
| CSRP1 | AP2A | - | | |
| PKMYT1 | AP2A | - | | |
| FKBP2 | AP2A | - | | |
| NDUFB10 | AP2A | - | | |
| MB | AP2A | - | | |
| SFN | AP2A | - | | |
| POLR2I | AP2A | - | | |
| STARD10 | AP2A | - | | |
| HNRNPUL1 | AP2A | - | | |
| RPL35 | AP2A | - | | |
| KEAP1 | AP2A | - | | |
| SPDEF | AP2A | - | | |
| MYO16 | AP2A | - | | |
| ARL6IP1 | AP2A | - | | |
| YBX2 | AP2A | - | | |
| DCXR | AP2A | - | | |
| ATP8B2 | AP2A | - | | |
| ZFAND3 | AP2A | - | | |
| GALNT12 | AP2A | - | | |
| ADCK4 | AP2A | - | | |
| SLC37A3 | AP2A | - | | |
| AGPAT1 | AP2A | - | | |
| PKHD1L1 | AP2A | - | | |
| NUDT1 | AP2A | - | | |
| ABCG1 | AP2A | - | | |
| BLVRB | GATA3 | - | | |
| CRAT | GATA3 | - | | |

Table S1 Regulatory network definition of edge and node by Cytoscape. In the third column ‘Up/Dn’, ‘+’ indicates the corresponding gene in the first columns is up-regulated, while ‘_’ indicates down-regulation. The number in the column ‘Group’ indicates the group, with 1 for up-regulated genes, -1 for down-regulated genes, -2 for hub TFs, and 2 for TCF7L2 (continued)

| Name_Node1 | Name_Node2 | Up/Dn | Node | |
|------------|------------|-------|------|-------|
| | | | Name | Group |
| RPL37 | GATA3 | - | | |
| RPL38 | GATA3 | - | | |
| ATP8B2 | GATA3 | - | | |
| ERGIC1 | GATA3 | - | | |
| GMDS | GATA3 | - | | |
| DDR1 | GATA3 | - | | |
| SAT1 | GATA3 | - | | |
| TFF1 | GATA3 | - | | |
| UNG | GATA3 | - | | |
| NR5A2 | GATA3 | - | | |
| IER3 | GATA3 | - | | |
| PKMYT1 | GATA3 | - | | |
| FKBP2 | GATA3 | - | | |
| MB | GATA3 | - | | |
| SFN | GATA3 | - | | |
| POLR2I | GATA3 | - | | |
| AGPAT1 | GATA3 | - | | |
| STARD10 | GATA3 | - | | |
| HNRNPUL1 | GATA3 | - | | |
| RPL35 | GATA3 | - | | |
| BRCA1 | GATA3 | - | | |
| SPDEF | GATA3 | - | | |
| SSBP2 | GATA3 | - | | |
| MYO16 | GATA3 | - | | |
| ARL6IP1 | GATA3 | - | | |
| DCXR | GATA3 | - | | |
| SLC35C1 | GATA3 | - | | |
| ATP8B2 | GATA3 | - | | |
| ZFAND3 | GATA3 | - | | |
| GALNT12 | GATA3 | - | | |
| ADCK4 | GATA3 | - | | |
| C10orf81 | GATA3 | - | | |

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| <i>Edge</i> | | <i>Up/Dn</i> | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | | <i>Name</i> | <i>Group</i> |
| AGPAT1 | GATA3 | - | | |
| C19orf33 | GATA3 | - | | |
| SLC44A1 | GATA3 | - | | |
| PKHD1L1 | GATA3 | - | | |
| H2AFJ | GATA3 | - | | |
| FBP1 | PBF | - | | |
| CRAT | PBF | - | | |
| RPL37 | PBF | - | | |
| RPL38 | PBF | - | | |
| RPLP1 | PBF | - | | |
| ATP8B2 | PBF | - | | |
| ERGIC1 | PBF | - | | |
| GMDS | PBF | - | | |
| SAT1 | PBF | - | | |
| TFF1 | PBF | - | | |
| TPD52L2 | PBF | - | | |
| UNG | PBF | - | | |
| NR5A2 | PBF | - | | |
| IER3 | PBF | - | | |
| CSRP1 | PBF | - | | |
| PKMYT1 | PBF | - | | |
| FKBP2 | PBF | - | | |
| NDUFB10 | PBF | - | | |
| SFN | PBF | - | | |
| STARD10 | PBF | - | | |
| HNRNPUL1 | PBF | - | | |
| BRCA1 | PBF | - | | |
| EPB41L1 | PBF | - | | |
| MYO16 | PBF | - | | |
| ARL6IP1 | PBF | - | | |
| DCXR | PBF | - | | |
| TREX1 | PBF | - | | |

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| Name_Node1 | Name_Node2 | Up/Dn | Edge | | Node |
|------------|------------|-------|------|-------|------|
| | | | | | |
| | | | Name | Group | |
| C17orf59 | PBF | - | | | |
| SLC35C1 | PBF | - | | | |
| ZFAND3 | PBF | - | | | |
| GGCT | PBF | - | | | |
| GALNT12 | PBF | - | | | |
| ADCK4 | PBF | - | | | |
| C10orf81 | PBF | - | | | |
| SLC37A3 | PBF | - | | | |
| AGPAT1 | PBF | - | | | |
| C19orf33 | PBF | - | | | |
| HNRNPUL1 | PBF | - | | | |
| PKHD1L1 | PBF | - | | | |
| H2AFJ | PBF | - | | | |
| NUDT1 | PBF | - | | | |
| ABCG1 | PBF | - | | | |
| CRAT | TCF7L2 | - | | | |
| RPL38 | TCF7L2 | - | | | |
| RPLP1 | TCF7L2 | - | | | |
| DBNL | TCF7L2 | - | | | |
| ERGIC1 | TCF7L2 | - | | | |
| ABR | TCF7L2 | - | | | |
| GMDS | TCF7L2 | - | | | |
| SAT1 | TCF7L2 | - | | | |
| UNG | TCF7L2 | - | | | |
| NR5A2 | TCF7L2 | - | | | |
| IER3 | TCF7L2 | - | | | |
| STARD10 | TCF7L2 | - | | | |
| BRCA1 | TCF7L2 | - | | | |
| EPB41L1 | TCF7L2 | - | | | |
| KEAP1 | TCF7L2 | - | | | |
| SSBP2 | TCF7L2 | - | | | |
| MYO16 | TCF7L2 | - | | | |

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| <i>Edge</i> | | <i>Up/Dn</i> | <i>Node</i> | |
|-------------------|-------------------|--------------|-------------|--------------|
| <i>Name_Node1</i> | <i>Name_Node2</i> | | <i>Name</i> | <i>Group</i> |
| ARL6IP1 | TCF7L2 | - | | |
| ATP8B2 | TCF7L2 | - | | |
| ADCK4 | TCF7L2 | - | | |
| AGPAT1 | TCF7L2 | - | | |
| C19orf33 | TCF7L2 | - | | |
| SLC44A1 | TCF7L2 | - | | |
| PKHD1L1 | TCF7L2 | - | | |