Supplementary Tables

# Supplementary Table 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sample ID** | **Vena contracta (mm)** | **AL thickness (mm)** | **PL thickness (mm)** | **AL length** **(cm)** | **PL length** **(cm)** | **Tenting area (cm2)** |
| 1 | 5.4 | 2.1 | 2 | 2.85 | 1.82 | 2.63 |
| 2 | 6.3 | 1.8 | 2.6 | 2.3 | 1.81 | 1.97 |
| 3 | 4.9 | 1.7 | 1.4 | 2.71 | 1.82 | 2.17 |
| 4 | 6 | 2.2 | 2 | 2.8 | 2.17 | 3.38 |
| 5 | 4.5 | 1.5 | 2 | 2.43 | 1.42 | 1.05 |
| 6 | 6.2 | 1.9 | 2.1 | 2.79 | 1.75 | 2.18 |
| 7 | 4 | 1.9 | 2.3 | 2.77 | 1.78 | 1.63 |
| 8 | 6.9 | 1.5 | 1.6 | 2.88 | 1.69 | 2.54 |
| 9 | 6.3 | 2.3 | 2 | 2.06 | 1.38 | 1.29 |
| 10 | 8 | 2.1 | 2 | 2.81 | 2.81 | 5.07 |
| 11 | 8 | 2.7 | 2.7 | 2.66 | 1.92 | 2.33 |
| 12 | 7.9 | 2.4 | 2 | 3.08 | 1.4 | 2.68 |
| 13 | 7.7 | 2.6 | 2.5 | 3 | 1.77 | 1.93 |
| 14 | 3.9 | 1.4 | 1.4 | 3.17 | 1.66 | 1.55 |
| 15 | 6.8 | 2.1 | 2.2 | 2.62 | 1.88 | 1.95 |
| 16 | 7.5 | 1.6 | 1.7 | 2.72 | 1.64 | 2.21 |
| 17 | 7.6 | 1.7 | 2 | 2.74 | 2.12 | 2.59 |
| **Average** | 6.347059 | 1.970588 | 2.029412 | 2.728824 | 1.814118 | 2.302941 |
| **SD** | 1.395581 | 0.38853 | 0.370413 | 0.272004 | 0.337232 | 0.909559 |

**Supplementary Table 1.** Table of echocardiographic measures for each donor, assessed before surgery.

* **Supplementary Table 2**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample ID** | **Age (years)** | **Gender** | **Thickness (µm)** |
| 1 | 55 | M | 587.6 |
| 2 | 75 | F | 682.7 |
| 3 | 56 | F | 725.9 |
| 4 | 75 | F | 619 |
| 5 | 57 | M | 628.7 |
| 6 | 64 | F | 439.9 |
| 7 | 73 | F | 353.3 |
| 8 | 60 | M | 425.3 |
| 9 | 53 | F | 362.5 |
| 10 | 75 | M | 474.2 |
| 11 | 67 | M | 1513.9 |
| 12 | 51 | M | 731.5 |
| 13 | 65 | M | 1129.2 |
| 14 | 72 | M | 302.4 |
| 15 | 85 | M | 1954.8 |
| 16 | 69 | M | 514.2 |
| 17 | 53 | F | 830.3 |
| **Median** | 65 | N/A | 619 |
| **Average** | 65 | 58.8% M | 722.0824 |
| **SD** | 9.962429 | N/A | 438.5281 |

**Supplementary Table 2.** Table of age (years), gender (male, M or female, F) and mitral valve thickness (µm) for each donor from biopsy sample. N/A, not applicable.

* **Supplementary Table 3**

|  |  |  |
| --- | --- | --- |
| **MSMR vs SMR** |  | **Linear Correlation to MR** |
| **Gene\_name** | **p value** | **Fold Change** | **Log2(FC)** |  | **Gene\_name** | **R** | **R^2** | **P value** |
| **MDGA2** | **0.017478** | **2.010091** | **1.007261** |  | ECH1 | 0.59601 | 0.355228 | 0.007475 |
| **PLEKHC1** | **0.039405** | **1.836055** | **0.876609** |  | A2M | 0.56665 | 0.321092 | 0.011933 |
| CHST14 | 0.039552 | 1.483669 | 0.569169 |  | **MDGA2** | **0.522018** | **0.272503** | **0.022582** |
| EIF4A2 | 0.042006 | 1.531822 | 0.615249 |  | ACADS | 0.517255 | 0.267553 | 0.02406 |
| CHAD | 0.042706 | 2.063737 | 1.045259 |  | CASQ2 | 0.504815 | 0.254838 | 0.028282 |
| TIMP3 | 0.04413 | 1.627907 | 0.703018 |  | **PLEKHC1** | **0.501716** | **0.251719** | **0.029419** |
|  |  |  |  |  | ACO2 | 0.48079 | 0.231159 | 0.038062 |
| FUS | 0.006459 | 0.593994 | -0.75148 |  | C3 | 0.478469 | 0.228932 | 0.03913 |
| HMGB1 | 0.015343 | 0.469609 | -1.09047 |  |  |  |  |  |
| **F12** | **0.015754** | **0.467328** | **-1.09749** |  | **GC** | **-0.68878** | **0.474414** | **0.001228** |
| **PRDX5** | **0.018924** | **0.748545** | **-0.41784** |  | **ESD** | **-0.65075** | **0.423473** | **0.00276** |
| HNRPD | 0.019811 | 0.705124 | -0.50405 |  | **F12** | **-0.62227** | **0.387226** | **0.004738** |
| SRSF2 | 0.024799 | 0.348765 | -1.51967 |  | **PRDX5** | **-0.61572** | **0.379106** | **0.005328** |
| PSME1 | 0.025119 | 0.700362 | -0.51383 |  | PLIN1 | -0.59702 | 0.356434 | 0.00735 |
| **GC** | **0.026087** | **0.312067** | **-1.68007** |  | **GSTP1** | **-0.59591** | **0.35511** | **0.007487** |
| **ESD** | **0.028415** | **0.759679** | **-0.39654** |  | GATM | -0.56896 | 0.323711 | 0.011519 |
| SFRS3 | 0.02979 | 0.238953 | -2.0652 |  | SH3BGRL3 | -0.5669 | 0.321377 | 0.011887 |
| PDIA3 | 0.041616 | 0.798236 | -0.32511 |  | HNRNPH3 | -0.53786 | 0.289291 | 0.018176 |
| **GSTP1** | **0.041984** | **0.779564** | **-0.35926** |  | CFL1 | -0.5229 | 0.273421 | 0.022317 |
| SEPTIN2 | 0.043007 | 0.607268 | -0.71959 |  | TNC | -0.51957 | 0.269956 | 0.023332 |
|  |  |  |  |  | RCN3 | -0.49987 | 0.249866 | 0.030115 |
|  |  |  |  |  | GFAP | -0.4881 | 0.238241 | 0.034845 |
|  |  |  |  |  | PPP1R7 | -0.47928 | 0.229709 | 0.038754 |
|  |  |  |  |  | CAPZA1 | -0.47803 | 0.228512 | 0.039335 |
|  |  |  |  |  | S100A13 | -0.46517 | 0.21638 | 0.045706 |
|  |  |  |  |  | CD44 | -0.46364 | 0.214964 | 0.04651 |
|  |  |  |  |  | PCOLCE | -0.458 | 0.209763 | 0.049583 |

**Supplementary Table 3.** Tables of proteins with significantly modulated in SMR samples compared to MSMR samples (left) and correlated with MR severity (right). Proteins with increased expression (Log2FC>0 or R>0) are shown in red, while the proteins with significantly decreased expression (Log2FC<0 or R<0) are presented in blue. Proteins shared in both analyses are presented in bold.

* **Supplementary Table 4**

|  |  |  |
| --- | --- | --- |
| **High vs Low EndMT** |  | **Linear Correlation to EndMT** |
| **Gene\_name** | **p value** | **Fold Change** | **Log2(FC)** |  | **Gene\_name** | **R** | **R^2** | **P value** |
| MED17 | 0.000899023 | 2.147185218 | 1.102446644 |  | PPBP | 0.643936173 | 0.414653795 | 0.005701 |
| JCHAIN | 0.001593409 | 2.593417993 | 1.374854751 |  | **CA2** | **0.613433222** | **0.376300317** | **0.009395** |
| **HBA2** | **0.003429675** | **6.193375251** | **2.63072586** |  | **CAT** | **0.579120077** | **0.335380064** | **0.015607** |
| **CA2** | **0.004421777** | **3.315962123** | **1.729427527** |  | **EHD2** | **0.569780489** | **0.324649805** | **0.017761** |
| **CAT** | **0.004499654** | **2.347036833** | **1.230840483** |  | **HRG** | **0.563338715** | **0.317350507** | **0.019378** |
| MAP4 | 0.004613701 | 1.995183972 | 0.996521781 |  | **HBD** | **0.541436867** | **0.293153881** | **0.025754** |
| SNCA | 0.005047303 | N/A | N/A |  | **GYPA** | **0.53432483** | **0.285503024** | **0.02814** |
| APOA1 | 0.005365771 | 1.585162245 | 0.664630511 |  | HAGH | 0.521068646 | 0.271512534 | 0.03304 |
| **HBD** | **0.005820663** | **4.105658318** | **2.037613568** |  | **CAVIN3** | **0.50856827** | **0.258641685** | **0.038238** |
| **HRG** | **0.005956874** | **1.670466376** | **0.740250944** |  | PRDX2 | 0.508252775 | 0.258320883 | 0.038377 |
| COL1A1 | 0.006050014 | 2.093729975 | 1.066075392 |  | **HBB** | **0.496053877** | **0.246069449** | **0.044044** |
| FBLIM1 | 0.008248391 | 3.507511389 | 1.810447789 |  | **HBA2** | **0.491808905** | **0.241875999** | **0.046158** |
| TTN | 0.008713797 | 1.511941978 | 0.596402776 |  | BLVRB | 0.486543367 | 0.236724448 | 0.048886 |
| **HBB** | **0.009264079** | **3.627484134** | **1.858969304** |  | LAMA5 | 0.480855089 | 0.231221617 | 0.038032 |
| HMGB1 | 0.010927109 | 2.145507286 | 1.1013188 |  | PRDX6 | 0.459635677 | 0.211264956 | 0.048676 |
| SPTB | 0.011142539 | 10.83367948 | 3.437451409 |  |  |  |  |  |
| SLC4A1 | 0.011811073 | 9.356986027 | 3.226043899 |  | IGH | -0.459846187 | 0.211458516 | 0.048561 |
| CA1 | 0.013606055 | 3.445348498 | 1.78464992 |  | SFPQ | -0.464387477 | 0.215655729 | 0.046115 |
| CAST | 0.013780092 | 1.596524352 | 0.674934559 |  | LAMB1 | -0.464936231 | 0.216165699 | 0.045826 |
| CLIC5 | 0.015534076 | N/A | N/A |  | CYBRD1 | -0.466625258 | 0.217739132 | 0.044946 |
| RPS12 | 0.01599671 | 2.029199068 | 1.020910403 |  | LAMP2 | -0.467674938 | 0.218719848 | 0.044405 |
| TAGLN2 | 0.018460054 | 1.554310929 | 0.636275133 |  | FBLN2 | -0.468926021 | 0.219891613 | 0.043767 |
| **GYPA** | **0.01854122** | **7.724053907** | **2.949358233** |  | HSPA2 | -0.4716133 | 0.222419105 | 0.042421 |
| NID1 | 0.020393587 | 2.068630247 | 1.048675797 |  | ESD | -0.472664268 | 0.22341151 | 0.041903 |
| LIMS2 | 0.023282378 | 7.907813399 | 2.983278828 |  | CAPZA1 | -0.473675084 | 0.224368085 | 0.041409 |
| EPB41L2 | 0.023363845 | 2.535781753 | 1.342430583 |  | UQCRC1 | -0.475041794 | 0.225664706 | 0.040749 |
| FGL2 | 0.027229366 | 1.657437485 | 0.728954456 |  | KCTD12 | -0.475993156 | 0.226569484 | 0.040295 |
| PDLIM5 | 0.028214485 | 1.630707801 | 0.705498295 |  | HSP90AB1 | -0.483769592 | 0.234033018 | 0.036724 |
| **CAVIN3** | **0.029479097** | **1.739270124** | **0.798482014** |  | PLXDC2 | -0.486093087 | 0.236286489 | 0.049125 |
| SRSF2 | 0.03108506 | 2.956425374 | 1.563853861 |  | **NDUFA7** | **-0.495469174** | **0.245489702** | **0.044331** |
| HDGF | 0.031411084 | 1.537978896 | 0.621035707 |  | LDHA | -0.496631586 | 0.246642932 | 0.043762 |
| TGFB1I1 | 0.032061869 | 3.623747846 | 1.857482571 |  | CPB2 | -0.507943453 | 0.258006552 | 0.038513 |
| AFM | 0.032948589 | 1.498881782 | 0.583886601 |  | SRPX | -0.508689154 | 0.258764656 | 0.038185 |
| HSPB2 | 0.03373806 | N/A | N/A |  | **LRP1** | **-0.516633774** | **0.266910457** | **0.034818** |
| SRSF1 | 0.035560422 | 11.04742142 | 3.465637764 |  | **HNRNPH3** | **-0.518557942** | **0.268902339** | **0.034038** |
| LASP1 | 0.035938837 | 3.799906511 | 1.925963925 |  | PGLS | -0.522298287 | 0.2727955 | 0.03256 |
| **EHD2** | **0.036024974** | **1.463282256** | **0.549208082** |  | PLA2G2A | -0.527974823 | 0.278757414 | 0.030412 |
| LMCD1 | 0.036780746 | 2.254779742 | 1.172986511 |  | A0A140VJL8 | -0.52860182 | 0.279419884 | 0.030181 |
| APOC4-APOC2 | 0.03739955 | 2.573117175 | 1.363517156 |  | **IQGAP1** | **-0.531526363** | **0.282520274** | **0.029124** |
| H1FX | 0.038091633 | 1.841148121 | 0.880605697 |  | ERP70 | -0.533252275 | 0.284357989 | 0.028514 |
| IGKV2D-24 | 0.039883319 | 1.971528082 | 0.97931426 |  | BST1 | -0.537352754 | 0.288747982 | 0.027104 |
| KRT14 | 0.04060256 | 4.13766912 | 2.048818281 |  | CNDP2 | -0.540778147 | 0.292441004 | 0.025968 |
| TINAGL1 | 0.045095955 | 1.986427701 | 0.990176285 |  | RBMX | -0.542015215 | 0.293780494 | 0.025567 |
| HINT1 | 0.046340935 | 1.749799008 | 0.807189216 |  | SERPINB6 | -0.542754387 | 0.294582325 | 0.025329 |
| MYL6 | 0.047474147 | 2.391365491 | 1.257834645 |  | ADD3 | -0.547167769 | 0.299392567 | 0.023948 |
| SFRS3 | 0.049673069 | 3.151652151 | 1.656108313 |  | F13A1 | -0.553152355 | 0.305977528 | 0.022168 |
|  |  |  |  |  | FTH1 | -0.555322179 | 0.308382722 | 0.021549 |
| APCS | 0.005364839 | 0.636176922 | -0.652500057 |  | CLIC1 | -0.577774225 | 0.333823055 | 0.015904 |
| TUFM | 0.009890313 | 0.660045672 | -0.599362239 |  | MAOA | -0.582424588 | 0.3392184 | 0.014896 |
| **NDUFA7** | **0.01103348** | **0.288608593** | **-1.79281384** |  | SCARB2 | -0.588760003 | 0.346638341 | 0.013605 |
| ARF4 | 0.016077432 | 0.692362607 | -0.530400285 |  | ECI2 | -0.614641077 | 0.377783653 | 0.00922 |
| HSPD1 | 0.017071341 | 0.795066399 | -0.330852745 |  | **LAP3** | **-0.633310859** | **0.401082645** | **0.006823** |
| **FTH1** | **0.018443415** | **0.437106546** | **-1.19394311** |  |  |  |  |  |
| **LRP1** | **0.020007404** | **0.702503063** | **-0.50942358** |  |  |  |  |  |
| FTL | 0.021039818 | 0.561581474 | -0.83243275 |  |  |  |  |  |
| ANXA4 | 0.029725421 | 0.656644091 | -0.606816471 |  |  |  |  |  |
| **IQGAP1** | **0.038593985** | **0.557545717** | **-0.842837988** |  |  |  |  |  |
| **HNRNPH3** | **0.040379214** | **0.745068645** | **-0.424554743** |  |  |  |  |  |
| **LAP3** | **0.041456732** | **0.393720929** | **-1.344754691** |  |  |  |  |  |
| FBN1 | 0.042672237 | 0.814095917 | -0.296729311 |  |  |  |  |  |
| CD55 | 0.049931265 | 0.407331119 | -1.295726058 |  |  |  |  |  |

**Supplementary Table 4.** Tables of proteins with significantly modulated in samples displaying high level of EndMT compared to samples low level of EndMT (left) and correlated with EndMT rate (right). Proteins with increased expression (Log2FC>0 or R>0) are shown in red, while the proteins with significantly decreased expression (Log2FC<0 or R<0) are presented in blue. Proteins shared in both analyses are presented in bold. N/A, not applicable.

* **Supplementary Table 5**

|  |  |  |
| --- | --- | --- |
| **Gene\_name** | **Endothelial-to-mesenchymal transition** | **Epithelial-to-mesenchymal transition** |
| HRG |  | [1] |
| EHD2 |  | [2] |
| FGL2 |  | [3] |
| FBN1 |  | [4; 5] |
| CA2 |  | [6] |
| LASP1 |  | [7; 8] |
| HMGB1 |  | [9] |
| LMCD1 |  | [10; 11] |
| NID1 |  | [12] |
| FTH1 |  | GO0001837, [13] |
| TGFB1I1 |  | GO0001837 |
| PRDX2 |  | [14] |
| SRPX |  | [15] |
| LRP1 |  | [16] |
| PLA2G2A |  | [17] |
| MAOA |  | [18] |
| TTN |  | [19] |
| IQGAP1 |  | [20; 21] |
| COL1A1 | [22] |  |
| CAST | [23] |  |
| TAGLN2 | [24] |  |
| CAT | [25] |  |
| APOA1 | [26] |  |
| BLVRB | [27] |  |

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