Mitochondrial carriers regulating insulin secretion profiled in human islets upon metabolic stress

JIMÉNEZ-SÁNCHEZ, Cecilia, BRUN, Thierry, MAECHLER, Pierre

Abstract
Chronic exposure of β-cells to nutrient-rich metabolic stress impairs mitochondrial metabolism and its coupling to insulin secretion. We exposed isolated human islets to different metabolic stresses for 3 days: 0.4 mM oleate or 0.4 mM palmitate at physiological 5.5 mM glucose (lipotoxicity), high 25 mM glucose (glucotoxicity), and high 25 mM glucose combined with 0.4 mM oleate and/or palmitate (glucolipotoxicity). Then, we profiled the mitochondrial carriers and associated genes with RNA-Seq. Diabetogenic conditions, and in particular glucotoxicity, increased expression of several mitochondrial solute carriers in human islets, such as the malate carrier DIC, the α-ketoglutarate-malate exchanger OGC, and the glutamate carrier GC1. Glucotoxicity also induced a general upregulation of the electron transport chain machinery, while palmitate largely counteracted this effect. Expression of different components of the TOM/TIM mitochondrial protein import system was increased by glucotoxicity, whereas glucolipotoxicity strongly upregulated its receptor subunit TOM70. Expression of the mitochondrial calcium uniporter MCU was […]

Reference
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Mitochondrial carriers regulating insulin secretion profiled in human islets upon metabolic stress

Supplementary Table S1: Clinical Data of the human donors of pancreatic islets, type of analyses performed and tested conditions.

Supplementary Table S2: Quantitative data related to the transcriptomic profiles of mitochondrial solute carriers and associated genes in human islets upon metabolic stress. NA: Not applicable, ND: not detected.

Supplementary Table S3: Quantitative data related to the transcriptomic profiles of the electron transport chain machinery and related mitochondrial carriers in human islets upon metabolic stress. NA: Not applicable, ND: not detected.

Supplementary Table S4: Quantitative data related to the transcriptomic profiles of the outer and inner mitochondrial membrane translocases TOM/TIM machinery in human islets upon metabolic stress. NA: Not applicable, ND: not detected.

Supplementary Table S5: Quantitative data related to the transcriptomic profiles of mitochondrial iron transport genes in human islets under metabolic stress. NA: Not applicable, ND: not detected.

Supplementary Table S6: Quantitative data related to the transcriptomic profiles of mitochondrial calcium transport genes in human islets upon metabolic stress. NA: Not applicable, ND: not detected.

Supplementary Table S7: Primers used for quantitative RT-PCR analysis

Supplementary Figure S1: Functional interaction network of human (a) mitochondrial calcium transport genes; (b) outer and inner mitochondrial membrane translocases TOM/TIM machinery; (c) electron transport chain machinery and related carriers; (d) mitochondrial iron transport genes. Nodes were connected using the STRING interaction knowledgebase with a confidence score >0.4.

Supplementary Figure S2: Effects of high 25 mM glucose (G25) and 0.4 mM oleate (Olea) or palmitate (Palm) on the transcriptional regulation of the electron transport chain machinery. Human islets were exposed to (a) Olea at G5.5, (b) Palm at G5.5, (c) G25, (d) G25+Olea+Palm, (e) G25+Olea, and (d) G25+Palm for 3 days before RNA-Seq analysis. Effects of culture conditions on transcript levels are compared to standard G5.5 medium and shown as upregulated (red), downregulated (blue), or unchanged (white). Missing values are represented in grey. Each disk is split into individual changes for the
different donors. Color code reflects the transcriptional changes in log2 fold changes (log2 FC) for that particular gene in individual donors. *adjusted p < 0.05, **adjusted p < 0.01, ***adjusted p < 0.001 between control 5.5 mM glucose and the specific culture condition.

**Supplementary Figure S3:** Effects of high 25 mM glucose (G25) and 0.4 mM oleate (Olea) or palmitate (Palm) on the transcriptional regulation of mitochondrial iron transport genes. Human islets were exposed to (a) Olea at G5.5, (b) Palm at G5.5, (c) G25, (d) G25+Olea+Palm, (e) G25+Olea, and (f) G25+Palm for 3 days before RNA-Seq analysis. Effects of culture conditions on transcript levels are compared to standard G5.5 medium and shown as upregulated (red), downregulated (blue), or unchanged (white). Missing values are represented in grey. Each disk is split into individual changes for the different donors. Color code reflects the transcriptional changes in log2 fold changes (log2 FC) for that particular gene in individual donors. *adjusted p < 0.05, **adjusted p < 0.01, ***adjusted p < 0.001 between control 5.5 mM glucose and the specific culture condition.

**Supplementary Figure S4:** Effects of high 25 mM glucose (G25) and 0.4 mM oleate (Olea) or palmitate (Palm) on the mRNA levels of selected genes in human islets measured by quantitative RT–PCR, normalized to cyclophilin A (PPIA).
**Supplementary Table S1:** Clinical Data of the human donors of pancreatic islets, type of analyses performed and tested conditions (25 mM glucose, G25; 0.4 mM oleate, Olea; 0.4 mM palmitate, Palm; 0.2 mM oleate plus 0.2 mM palmitate, Olea+Palm). * DOI: 10.1093/hmg/ddv247

| Donor | Gender | Age (years) | BMI (kg/m²) | Cause of death       | Culture (days) | Viability (%) | Purity (%) | Type of analysis performed                                      | Tested conditions in RNA-Seq analyses |
|-------|--------|-------------|-------------|----------------------|----------------|---------------|------------|---------------------------------------------------------------|-------------------------------------|
| #1    | M      | 56          | 28.6        | Cranial trauma       | 3              | 90            | 50         | RNA–Seq, qRT–PCR, and previously published* NanoString®       | Olea, Palm, G25                     |
| #2    | M      | 59          | 27.2        | Trauma               | 2              | 90            | 60         | RNA–Seq, Q–RT–PCR, and previously published* NanoString®      | Olea, Palm, G25                     |
| #3    | F      | 41          | 22.4        | Cerebral haemorrhage | 2              | 90            | 80         | RNA–Seq                                                      | G25, G25+Olea, G25+Olea, G25+Palm   |
| #4    | M      | 46          | 27.2        | Cerebral haemorrhage | 2              | 90            | 75         | RNA–Seq, qRT–PCR                                             | G25, G25+Olea                       |
| #5    | F      | 59          | 23.7        | Cerebral trauma      | 4              | 90            | 84         | RNA–Seq                                                      | G25+Olea, G25+Palm, G25+Olea, G25+Palm |
| #6    | M      | 43          | 23.2        | Cranial trauma       | 1              | 95            | 87         | qRT–PCR, and previously published* NanoString®                |                                     |
| #7    | M      | 59          | 25.6        | Cerebral haemorrhage | 3              | 90            | 75         | qRT–PCR                                                      |                                     |
| #8    | M      | 49          | 26.2        | Cerebral haemorrhage | 5              | 90            | 84         | qRT–PCR                                                      |                                     |

M (6) 75% 52.0 ± 6.9 26.3 ± 1.8 2.7 ± 1.3 90.8 ± 2.0 71.8 ± 14.2
|       |   F (2) |   All (8) |
|-------|--------|----------|
|   %   |  25%   |  100%    |
| Value | 50.0 ± 12.7 | 51.5 ± 7.6 |
| Value | 23.1 ± 0.9  | 25.5 ± 2.2  |
| Value | 3.0 ± 1.4   | 2.8 ± 1.3   |
| Value | 90 ± 0      | 90.6 ± 1.80 |
| Value | 82.0 ± 2.8  | 74.3 ± 13.0 |

**Supplementary Table S2.** Quantitative data related to the transcriptomic profiles of mitochondrial solute carriers and associated genes in human islets upon metabolic stress. NA: Not applicable (condition not tested); ND: not detected.

| Accession (NCBI Ref. Sequence) | Gene symbol | Donor #1 |  |  |  | Donor #2 |  |  |  |  |  | Donor #3 |  |  |  |  |  |  | Donor #4 |  |  |  |  |  |  | Donor #5 |  |  |  |  |  |  |
|--------------------------------|-------------|---------|---|---|---|---------|---|---|---|---|---|---------|---|---|---|---|---|---|---------|---|---|---|---|---|---|---------|---|---|---|---|---|---|
|                                |             | Log2 FC | Adjusted p | Log2 FC | Adjusted p | Log2 FC | Adjusted p | Log2 FC | Adjusted p | Log2 FC | Adjusted p | Log2 FC | Adjusted p | Log2 FC | Adjusted p | Log2 FC | Adjusted p | Log2 FC | Adjusted p | Log2 FC | Adjusted p |
| NM_001098                      | ACO2        | 0.341   | 0.425        | 0.123   | 0.858        | NA      | NA          | 0.115   | 0.831        | NA      | NA          |
| NM_004077                      | CS          | -0.134  | 0.760        | 0.097   | 0.882        | NA      | NA          | -0.089  | 0.880        | NA      | NA          |
| NM_000143                      | FH          | -0.081  | 0.890        | 0.047   | 0.965        | NA      | NA          | -0.211  | 0.643        | NA      | NA          |
| NM_012084                      | GLUD2       | ND      | ND           | ND      | ND           | NA      | NA          | -0.307  | 0.816        | NA      | NA          |
| NM_002080                      | GOT2        | -0.259  | 0.493        | 0.079   | 0.913        | NA      | NA          | 0.031   | 0.975        | NA      | NA          |
| NM_002168                      | IDH2        | 0.219   | 0.642        | -0.009  | 1.000        | NA      | NA          | 0.351   | 0.385        | NA      | NA          |
| NM_005530                      | IDH3A       | -0.552  | 0.123        | -0.285  | 0.557        | NA      | NA          | -0.132  | 0.801        | NA      | NA          |
| NM_174855                      | IDH3B       | -0.586  | 0.157        | 0.386   | 0.443        | NA      | NA          | 0.323   | 0.429        | NA      | NA          |
| NM_174869                      | IDH3G       | 0.371   | 0.502        | 0.290   | 0.590        | NA      | NA          | 0.241   | 0.584        | NA      | NA          |
| NM_001282404                   | MDH2        | 0.139   | 0.755        | 0.180   | 0.728        | NA      | NA          | 0.063   | 0.923        | NA      | NA          |
| NM_016098                      | MPC1        | -0.525  | 0.214        | 0.221   | 0.733        | NA      | NA          | -0.242  | 0.590        | NA      | NA          |
| NM_001143674                   | MPC2        | -0.591  | 0.066        | 0.161   | 0.771        | NA      | NA          | 0.170   | 0.712        | NA      | NA          |
| NM_001165036                   | OGDH        | 0.864   | 0.006        | 0.069   | 0.930        | NA      | NA          | 0.081   | 0.891        | NA      | NA          |
| NM_002610                      | PC          | 0.559   | 0.410        | -0.152  | 0.875        | NA      | NA          | -0.157  | 0.772        | NA      | NA          |
| NM_004563                      | PCK2        | 1.107   | 0.001        | 0.093   | 0.895        | NA      | NA          | 0.270   | 0.508        | NA      | NA          |
| NM_001173456                   | PDHA1       | 0.218   | 0.636        | 0.071   | 0.935        | NA      | NA          | 0.165   | 0.733        | NA      | NA          |
| NM_001173468                   | PDHB        | -0.428  | 0.248        | 0.093   | 0.899        | NA      | NA          | 0.178   | 0.714        | NA      | NA          |
| NM_003477                      | PDHX        | -0.101  | 0.864        | -0.443  | 0.349        | NA      | NA          | -0.269  | 0.523        | NA      | NA          |
| NM_002610                      | PDK1        | 0.456   | 0.464        | -0.269  | 0.704        | NA      | NA          | 1.106   | 0.000        | NA      | NA          |
| NM_001199898                   | PDK2        | 0.910   | 0.080        | 0.362   | 0.517        | NA      | NA          | 0.610   | 0.088        | NA      | NA          |
| NM_001142386                   | PDK3        | -0.132  | 0.761        | -0.299  | 0.501        | NA      | NA          | 0.066   | 0.915        | NA      | NA          |
| NM_002612                      | PDK4        | 0.051   | 0.934        | 0.038   | 0.972        | NA      | NA          | -0.544  | 0.077        | NA      | NA          |
| NM_001294332                   | SDHA        | -0.219  | 0.627        | 0.026   | 0.995        | NA      | NA          | -0.189  | 0.679        | NA      | NA          |
| NM_003000 | SDHB | 0.140 | 0.801 | 0.444 | 0.308 | NA | NA | 0.011 | 1.000 | NA | NA |
| NM_003001 | SDHC | -0.148 | 0.795 | -0.231 | 0.704 | NA | NA | 0.267 | 0.538 | NA | NA |
| NM_001276503 | SDHD | -0.169 | 0.728 | 0.165 | 0.793 | NA | NA | -0.190 | 0.697 | NA | NA |
| NM_005984 | SLC25A1 | 0.611 | 0.146 | 0.435 | 0.320 | NA | NA | 0.292 | 0.450 | NA | NA |
| NM_012140 | SLC25A10 | 1.458 | 0.005 | 0.746 | 0.108 | NA | NA | 0.435 | 0.252 | NA | NA |
| NM_001165418 | SLC25A11 | 0.857 | 0.042 | 0.509 | 0.267 | NA | NA | -0.036 | 0.968 | NA | NA |
| NM_003705 | SLC25A12 | -0.185 | 0.737 | -0.291 | 0.584 | NA | NA | -0.301 | 0.480 | NA | NA |
| NM_001160210 | SLC25A13 | -0.396 | 0.334 | 0.216 | 0.730 | NA | NA | -0.045 | 0.962 | NA | NA |
| NM_014252 | SLC25A15 | 0.119 | 0.955 | -1.011 | 0.066 | NA | NA | -0.130 | 0.886 | NA | NA |
| NM_001303484 | SLC25A18 | ND | ND | ND | ND | NA | NA | 0.226 | 0.817 | NA | NA |
| NM_000387 | SLC25A20 | -0.210 | 0.731 | 0.330 | 0.567 | NA | NA | -0.276 | 0.535 | NA | NA |
| NM_001191061 | SLC25A22 | 1.905 | 0.000 | 0.496 | 0.240 | NA | NA | 0.030 | 0.975 | NA | NA |
| NM_001039355 | SLC25A29 | 0.508 | 0.298 | 0.216 | 0.731 | NA | NA | 0.565 | 0.075 | NA | NA |
| NM_178526 | SLC25A42 | 0.543 | 0.462 | 0.015 | 1.000 | NA | NA | 0.224 | 0.637 | NA | NA |
| NM_198580 | SLC27A1 | 2.010 | 0.000 | 0.310 | 0.621 | NA | NA | 0.608 | 0.078 | NA | NA |
| NM_003850 | SUCLA2 | -0.514 | 0.162 | -0.009 | 1.000 | NA | NA | -0.632 | 0.057 | NA | NA |
| NM_003849 | SUCLG1 | -0.662 | 0.042 | 0.229 | 0.655 | NA | NA | -0.302 | 0.442 | NA | NA |
| NM_001177599 | SUCLG2 | -0.323 | 0.580 | -0.076 | 0.948 | NA | NA | -0.025 | 0.994 | NA | NA |
| NM_003355 | UCP2 | 0.167 | 0.829 | 0.252 | 0.685 | NA | NA | 0.257 | 0.619 | NA | NA |
| NM_001098 | ACO2 | 0.334 | 0.455 | 0.037 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_004077 | CS | -0.159 | 0.741 | -0.139 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_000143 | FH | 0.130 | 0.818 | -0.111 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_012084 | GLUD2 | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA |
| NM_002080 | GOT2 | -0.258 | 0.524 | -0.062 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_0002168 | IDH2 | -0.038 | 1.000 | 0.045 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_005530 | IDH3A | -0.199 | 0.681 | -0.347 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_174855 | IDH3B | -0.076 | 0.939 | 0.334 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_174869 | IDH3G | 0.309 | 0.618 | -0.122 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_001282404 | MDH2   | 0.256 | 0.524 | -0.182 | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_016098    | MPC1   | 0.229 | 0.669 | 0.041  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_00143674  | MPC2   | -0.151| 0.758 | 0.181  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_001165036 | OGDH   | 0.342 | 0.426 | 0.131  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_000920    | PC     | 0.856 | 0.156 | 0.281  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_004563    | PCK2   | 1.223 | 0.000 | 0.053  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_001173456 | PDHA1  | 0.217 | 0.673 | -0.080 | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_00173468  | PDHB   | -0.113| 0.851 | 0.014  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_003477    | PDHX   | -0.124| 0.857 | -0.057 | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_002610    | PDK1   | 0.320 | 0.681 | 0.254  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_00199898  | PDK2   | 0.976 | 0.066 | 0.045  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_00142386  | PDK3   | -0.103| 0.851 | 0.092  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_002612    | PDK4   | 0.801 | 0.004 | 1.039  | 0.004 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_001294332 | SDHA   | -0.225| 0.663 | 0.043  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_003000    | SDHB   | 0.195 | 0.724 | 0.136  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_003001    | SDHC   | -0.371| 0.466 | -0.261 | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_001276503 | SDHD   | 0.060 | 0.959 | 0.088  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_005984    | SLC25A1| 0.591 | 0.184 | 0.295  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_012140    | SLC25A10| 1.161| 0.045 | 0.329  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_001165418 | SLC25A11| 1.096| 0.006 | 0.279  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_003705    | SLC25A12| 0.243| 0.639 | -0.102 | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_001160210 | SLC25A13| -0.082| 0.929 | 0.009  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_014252    | SLC25A15| 0.071| 0.970 | -0.446 | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_001303484 | SLC25A18| ND   | ND    | ND     | ND    | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_000387    | SLC25A20| 0.164| 0.819 | 0.319  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_001191061 | SLC25A22| 1.544| 0.000 | 0.456  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_001039355 | SLC25A29| 0.628| 0.195 | 0.322  | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| NM_178526    | SLC25A42| 0.985| 0.114 | -0.403 | 1.000 | NA    | NA    | NA    | NA    | NA    | NA    | NA    | NA    |
| Gene Symbol | Gene Name | G25 Value | G25 Value | G25 Value | G25 Value | G25 Value | G25 Value | G25 Value | G25 Value |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| NM_198580   | SLC27A1   | 1.759     | 0.002     | 0.151     | 1.000     | NA        | NA        | NA        | NA        |
| NM_003850   | SUCLA2    | -0.534    | 0.152     | 0.199     | 1.000     | NA        | NA        | NA        | NA        |
| NM_003849   | SUCLG1    | -0.202    | 0.658     | 0.115     | 1.000     | NA        | NA        | NA        | NA        |
| NM_001177599| SUCLG2    | -0.586    | 0.268     | 0.366     | 1.000     | NA        | NA        | NA        | NA        |
| NM_003355   | UCP2      | 0.506     | 0.413     | -0.048    | 1.000     | NA        | NA        | NA        | NA        |
| NM_001098   | ACO2      | 0.080     | 0.918     | -0.147    | 0.811     | -0.069    | 0.938     | 0.557     | 0.036     |
| NM_004077   | CS        | 0.040     | 0.954     | -0.014    | 1.000     | 0.031     | 0.987     | 0.238     | 0.436     |
| NM_000143   | FD        | -0.270    | 0.483     | 0.019     | 1.000     | -0.368    | 0.374     | 0.149     | 0.671     |
| NM_012084   | GLUD2     | 0.492     | 0.184     | 0.283     | 0.541     | 0.654     | 0.022     | 0.173     | 0.630     |
| NM_002080   | GOT2      | -0.480    | 0.154     | 0.075     | 0.923     | 0.012     | 1.000     | 0.134     | 0.702     |
| NM_002168   | IDH2      | -0.374    | 0.362     | 0.392     | 0.395     | -0.118    | 0.858     | 0.110     | 0.780     |
| NM_005530   | IDH3A     | 1.019     | 0.006     | 0.435     | 0.316     | -0.242    | 0.613     | -0.436    | 0.149     |
| NM_174855   | IDH3B     | 0.766     | 0.006     | 0.757     | 0.010     | 0.040     | 0.976     | 0.405     | 0.139     |
| NM_174869   | IDH3G     | 1.025     | 0.001     | 0.140     | 0.782     | 0.032     | 0.986     | 0.812     | 0.001     |
| NM_001282404| MDH2      | 1.215     | 0.000     | 0.366     | 0.383     | 0.163     | 0.767     | -0.469    | 0.093     |
| NM_016098   | MPC1      | 2.496     | 0.000     | 1.388     | 0.000     | 0.796     | 0.011     | 0.120     | 0.772     |
| NM_001143674| MPC2      | 0.941     | 0.018     | 0.705     | 0.064     | -0.090    | 0.906     | -0.221    | 0.489     |
| NM_001165036| OGDH      | -0.065    | 0.899     | 0.170     | 0.819     | 0.293     | 0.687     | 0.673     | 0.015     |
| NM_000920   | PC        | -0.343    | 0.338     | -0.106    | 0.873     | -0.191    | 0.708     | -0.323    | 0.293     |
| NM_004563   | PCK2      | -0.306    | 0.370     | 0.222     | 0.629     | -0.232    | 0.625     | 0.289     | 0.335     |
| NM_001173456| PDHA1     | -0.273    | 0.649     | -0.140    | 0.894     | -0.224    | 0.677     | -0.593    | 0.056     |
| NM_001173468| PDHB      | 0.104     | 0.869     | -0.039    | 0.983     | -0.628    | 0.073     | 0.324     | 0.297     |
| NM_003477   | PDHX      | 0.062     | 0.932     | 0.522     | 0.218     | 0.079     | 0.932     | 0.389     | 0.198     |
| NM_002610   | PDK1      | ND        | ND        | ND        | ND        | ND        | ND        | 0.242     | 0.661     |
| NM_001199898| PDK2      | 0.370     | 0.681     | -0.265    | 0.749     | -0.034    | 0.989     | 0.170     | 0.631     |
| NM_001142386| PDK3      | 0.859     | 0.013     | 0.525     | 0.136     | -0.150    | 0.823     | -0.429    | 0.136     |
| NM_002612   | PDK4      | 0.102     | 0.852     | -0.006    | 1.000     | -0.072    | 0.931     | 1.058     | 0.000     |
| NM_001294332| SDHA      | 0.010     | 1.000     | 0.453     | 0.228     | -0.310    | 0.441     | -0.331    | 0.281     |
| Symbol       | Gene | G25+Olca+Palm |
|--------------|------|---------------|
| NM_003000    | SDHB | NA            |
| NM_003001    | SDHC | 0.411         |
| NM_001276503 | SDHD | 0.818         |
| NM_005984    | SLC25A1 | -0.264     |
| NM_012140    | SLC25A10 | -0.050     |
| NM_001165548 | SLC25A11 | -0.143     |
| NM_003705    | SLC25A12 | -0.283     |
| NM_001160210 | SLC25A13 | ND         |
| NM_014252    | SLC25A15 | -0.094     |
| NM_001303484 | SLC25A18 | 2.211      |
| NM_000387    | SLC25A20 | 0.014      |
| NM_001191061 | SLC25A22 | -0.006     |
| NM_001039355 | SLC25A29 | 1.728      |
| NM_178526    | SLC25A42 | -0.149     |
| NM_198580    | SLC27A1 | -0.128     |
| NM_003850    | SUCLA2 | 0.405      |
| NM_003849    | SUCLG1 | -0.243      |
| NM_001177599 | SUCLG2 | -0.316     |
| NM_003355    | UCP2  | 1.016        |
| NM_001098    | ACO2  | NA           |
| NM_004077    | CS    | NA           |
| NM_000143    | FH    | NA           |
| NM_012084    | GLUD2 | NA           |
| NM_002080    | GOT2  | NA           |
| NM_002168    | IDH2  | NA           |
| NM_005530    | IDH3A | NA           |
| NM_174855    | IDH3B | NA           |
| NM_174869    | IDH3G | NA           |

**G25+Olca+Palm**:

- NA: Not available
- ND: Not determined
| Gene ID     | Gene Symbol | F2  | F3  | F4  | F5  | F6  | F7  | F8  | F9  | F10 | F11 | F12 | F13 |
|-------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| NM_001282404| MDH2        | NA  | NA  | NA  | NA  | -0.017 | 0.996 | NA  | NA  | -0.084 | 0.997 |
| NM_016098   | MPC1        | NA  | NA  | NA  | NA  | -0.265 | 0.577 | NA  | NA  | -0.120 | 0.977 |
| NM_001143674| MPC2        | NA  | NA  | NA  | NA  | -0.278 | 0.517 | NA  | NA  | 0.172  | 0.899 |
| NM_001165036| OGDH        | NA  | NA  | NA  | NA  | 0.166  | 0.770 | NA  | NA  | 0.052  | 1.000 |
| NM_000920   | PC          | NA  | NA  | NA  | NA  | 0.045  | 0.974 | NA  | NA  | -0.132 | 0.984 |
| NM_004563   | PCK2        | NA  | NA  | NA  | NA  | -0.101 | 0.903 | NA  | NA  | 0.078  | 1.000 |
| NM_001173456| PDHA1       | NA  | NA  | NA  | NA  | 0.032  | 0.980 | NA  | NA  | 0.021  | 1.000 |
| NM_001173468| PDHB        | NA  | NA  | NA  | NA  | 0.014  | 1.000 | NA  | NA  | -0.148 | 0.931 |
| NM_003477   | PDHX        | NA  | NA  | NA  | NA  | -0.262 | 0.581 | NA  | NA  | 0.044  | 1.000 |
| NM_002610   | PDK1        | NA  | NA  | NA  | NA  | -0.779 | 0.006 | NA  | NA  | 0.499  | 0.240 |
| NM_001199898| PDK2        | NA  | NA  | NA  | NA  | -0.076 | 0.935 | NA  | NA  | -0.338 | 0.649 |
| NM_001142386| PDK3        | NA  | NA  | NA  | NA  | -0.326 | 0.411 | NA  | NA  | 0.234  | 0.784 |
| NM_002612   | PDK4        | NA  | NA  | NA  | NA  | 0.453  | 0.166 | NA  | NA  | 0.992  | 0.000 |
| NM_001294332| SDHA        | NA  | NA  | NA  | NA  | 0.226  | 0.638 | NA  | NA  | -0.043 | 1.000 |
| NM_003000   | SDHB        | NA  | NA  | NA  | NA  | -0.111 | 1.000 | NA  | NA  | -0.131 | 0.963 |
| NM_003001   | SDHC        | NA  | NA  | NA  | NA  | -0.013 | 1.000 | NA  | NA  | -0.153 | 0.932 |
| NM_001276503| SDHD        | NA  | NA  | NA  | NA  | -0.060 | 0.946 | NA  | NA  | 0.082  | 1.000 |
| NM_005984   | SLC25A1     | NA  | NA  | NA  | NA  | 0.113  | 0.860 | NA  | NA  | 0.616  | 0.071 |
| NM_012140   | SLC25A10    | NA  | NA  | NA  | NA  | 0.554  | 0.136 | NA  | NA  | 0.203  | 0.889 |
| NM_001165418| SLC25A11    | NA  | NA  | NA  | NA  | 0.084  | 0.910 | NA  | NA  | 0.013  | 1.000 |
| NM_003705   | SLC25A12    | NA  | NA  | NA  | NA  | -0.534 | 0.158 | NA  | NA  | 0.069  | 1.000 |
| NM_001160210| SLC25A13    | NA  | NA  | NA  | NA  | 0.325  | 0.464 | NA  | NA  | -0.175 | 0.907 |
| NM_014252   | SLC25A15    | NA  | NA  | NA  | NA  | 0.568  | 0.340 | NA  | NA  | 0.593  | 0.582 |
| NM_001303484| SLC25A18    | NA  | NA  | NA  | NA  | ND     | ND     | NA  | NA  | ND     | ND     |
| NM_000387   | SLC25A20    | NA  | NA  | NA  | NA  | 0.598  | 0.090 | NA  | NA  | 0.570  | 0.140 |
| NM_001191061| SLC25A22    | NA  | NA  | NA  | NA  | -0.209 | 0.682 | NA  | NA  | 0.323  | 0.614 |
| NM_001039355| SLC25A29    | NA  | NA  | NA  | NA  | -0.205 | 0.755 | NA  | NA  | 0.728  | 0.061 |
| NM_178526   | SLC25A42    | NA  | NA  | NA  | NA  | -0.579 | 0.349 | NA  | NA  | 0.086  | 1.000 |
| Gene Symbol | Gene Name | NA | NA | NA | NA | 0.625 | 0.098 | NA | NA | 0.427 | 0.677 |
|-------------|-----------|----|----|----|----|--------|--------|----|----|-------|-------|
| NM_198580   | SLC27A1   | NA | NA | NA | NA | 0.054  | 0.953  | NA | NA | 0.030  | 1.000 |
| NM_003850   | SUCLA2    | NA | NA | NA | NA | 0.052  | 0.956  | NA | NA | 0.013  | 1.000 |
| NM_003849   | SUCLG1    | NA | NA | NA | NA | 0.108  | 0.890  | NA | NA | 0.281  | 0.766 |
| NM_001177599| SUCLG2    | NA | NA | NA | NA | 0.047  | 0.968  | NA | NA | 0.333  | 0.596 |
| NM_001098   | ACO2      | NA | NA | NA | NA | 0.112  | 0.850  | 0.824| 0.001| 0.112  | 0.927 |
| NM_001143674| PDHB      | NA | NA | NA | NA | -0.183 | 0.748  | 0.065| 0.862| 0.059  | 0.978 |
| NM_000475247| PDHA1     | NA | NA | NA | NA | 0.099  | 0.873  | 1.101| 0.000| 0.085  | 0.951 |
| NM_001283363| PDHB      | NA | NA | NA | NA | -0.206 | 0.675  | -0.434| 0.116| 0.049  | 0.983 |
| NM_001989358| PDK2      | NA | NA | NA | NA | 0.228  | 0.649  | 0.082| 0.857| 0.118  | 0.931 |
| NM_001294332| SDHA      | NA | NA | NA | NA | 0.528  | 0.084  | 0.265| 0.352| -0.149 | 0.872 |

**G25+Olea**
| Gene          | G25+Palm | AC02 | CS | FH | GLUD2 | GOT2 | IDH2 | IDH3A | IDH3B | IDH3G |
|---------------|---------|------|----|----|-------|------|------|-------|-------|-------|
| NM_003000     | NA      | NA   | NA | NA | NA    | NA   | NA   | NA    | NA    | NA    |
| NM_003001     | NA      | NA   | NA | NA | NA    | NA   | NA   | NA    | NA    | NA    |
| NM_001276503  | NA      | NA   | NA | NA | NA    | NA   | NA   | -0.114| -0.105| -0.231|
| NM_005984     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.275 | 0.257 | 0.075 |
| NM_012140     | NA      | NA   | NA | NA | NA    | NA   | NA   | -0.033| -0.057| 0.646 |
| NM_01165418   | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.275 | 0.725 | 0.199 |
| NM_003705     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.275 | 0.235 | 0.646 |
| NM_001160210  | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.795 | 0.114 | 0.478 |
| NM_014252     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.325 | 0.422 | 0.177 |
| NM_001303484  | NA      | NA   | NA | NA | NA    | NA   | NA   | -0.453| -0.533| 0.325 |
| NM_000387     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.057 | 0.422 | 0.646 |
| NM_001191061  | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.646 | 0.214 | 0.138 |
| NM_001039355  | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.646 | 0.214 | 0.138 |
| NM_178526     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.199 | 0.422 | 0.256 |
| NM_198580     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.724 | 0.724 | 0.223 |
| NM_003850     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.368 | 0.380 | 0.368 |
| NM_003849     | NA      | NA   | NA | NA | NA    | NA   | NA   | -0.114| -0.114| 0.114 |
| NM_001177599  | NA      | NA   | NA | NA | NA    | NA   | NA   | -0.031| -0.031| 0.031 |
| NM_003355     | NA      | NA   | NA | NA | NA    | NA   | NA   | -0.028| -0.028| 0.028 |
| NM_001098     | NA      | NA   | NA | NA | NA    | NA   | NA   | -0.383| -0.383| 0.383 |
| NM_004077     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.215 | 0.215 | 0.215 |
| NM_000143     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.215 | 0.215 | 0.215 |
| NM_012084     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.724 | 0.724 | 0.724 |
| NM_002080     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.215 | 0.215 | 0.215 |
| NM_002168     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.215 | 0.215 | 0.215 |
| NM_005530     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.215 | 0.215 | 0.215 |
| NM_174855     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.215 | 0.215 | 0.215 |
| NM_174869     | NA      | NA   | NA | NA | NA    | NA   | NA   | 0.215 | 0.215 | 0.215 |
| Accession   | Gene Symbol | Description | Freq | Freq | Frequency | Frequency | Freq | Freq | Frequency | Frequency | Freq | Freq | Frequency | Frequency |
|-------------|-------------|-------------|------|------|-----------|-----------|------|------|-----------|-----------|------|------|-----------|-----------|
| NM_001282404 | MDH2        | NA          | NA   | NA   | -0.117    | 0.816     | NA   | NA   | -0.201    | 0.758     |
| NM_016098    | MPC1        | NA          | NA   | NA   | -0.211    | 0.598     | NA   | NA   | 0.327     | 0.467     |
| NM_001143674 | MPC2        | NA          | NA   | NA   | -0.111    | 0.837     | NA   | NA   | 0.068     | 0.971     |
| NM_001165036 | OGDH        | NA          | NA   | NA   | -0.268    | 0.532     | NA   | NA   | -0.216    | 0.806     |
| NM_000920    | PC          | NA          | NA   | NA   | -0.228    | 0.616     | NA   | NA   | -0.051    | 0.990     |
| NM_001173456 | PDHA1       | NA          | NA   | NA   | 0.107     | 0.843     | NA   | NA   | 0.063     | 0.976     |
| NM_001173468 | PDHB        | NA          | NA   | NA   | -0.292    | 0.406     | NA   | NA   | -0.121    | 0.893     |
| NM_002610    | PDK1        | NA          | NA   | NA   | 0.143     | 0.761     | NA   | NA   | 0.014     | 1.000     |
| NM_001199898 | PDK2        | NA          | NA   | NA   | -0.070    | 0.924     | NA   | NA   | -0.117    | 0.922     |
| NM_001142386 | PDK3        | NA          | NA   | NA   | -0.320    | 0.345     | NA   | NA   | 0.113     | 0.905     |
| NM_002612    | PDK4        | NA          | NA   | NA   | 0.338     | 0.296     | NA   | NA   | 1.876     | 0.000     |
| NM_001294332 | SDHA        | NA          | NA   | NA   | 0.241     | 0.525     | NA   | NA   | -0.084    | 0.952     |
| NM_003000    | SDHB        | NA          | NA   | NA   | -0.084    | 0.886     | NA   | NA   | 0.032     | 1.000     |
| NM_003001    | SDHC        | NA          | NA   | NA   | -0.365    | 0.277     | NA   | NA   | -0.257    | 0.660     |
| NM_001276503 | SDHD        | NA          | NA   | NA   | -0.001    | 1.000     | NA   | NA   | 0.186     | 0.795     |
| NM_005984    | SLC25A1     | NA          | NA   | NA   | 0.094     | 0.864     | NA   | NA   | 0.468     | 0.215     |
| NM_012140    | SLC25A10    | NA          | NA   | NA   | 0.557     | 0.090     | NA   | NA   | 0.166     | 0.862     |
| NM_001165418 | SLC25A11    | NA          | NA   | NA   | -0.184    | 0.675     | NA   | NA   | 0.011     | 1.000     |
| NM_003705    | SLC25A12    | NA          | NA   | NA   | -0.572    | 0.077     | NA   | NA   | -0.022    | 1.000     |
| NM_00160210  | SLC25A13    | NA          | NA   | NA   | 0.262     | 0.511     | NA   | NA   | -0.388    | 0.368     |
| NM_014252    | SLC25A15    | NA          | NA   | NA   | 0.814     | 0.048     | NA   | NA   | 0.857     | 0.154     |
| NM_001303484 | SLC25A18    | NA          | NA   | NA   | ND        | ND        | NA   | NA   | ND        | ND        |
| NM_000387    | SLC25A20    | NA          | NA   | NA   | 0.547     | 0.090     | NA   | NA   | 0.503     | 0.196     |
| NM_00191061  | SLC25A22    | NA          | NA   | NA   | -0.337    | 0.323     | NA   | NA   | 0.320     | 0.516     |
| NM_001039355 | SLC25A29    | NA          | NA   | NA   | 0.185     | 0.727     | NA   | NA   | 0.773     | 0.030     |
| NM_178526    | SLC25A42    | NA          | NA   | NA   | -0.191    | 0.795     | NA   | NA   | -0.189    | 0.882     |
| Gene Symbol | Description | NM_198580 | SLC27A1 | NA | NA | NA | NA | 0.376 | 0.354 | NA | NA | 0.457 | 0.507 |
|-------------|-------------|-----------|----------|----|----|----|----|-------|-------|----|----|-------|-------|
| NM_003850   | SUCLA2      | NA        | NA       | NA | NA | NA | NA | -0.085 | 0.883 | NA | NA | -0.107 | 0.916 |
| NM_003849   | SUCLG1      | NA        | NA       | NA | NA | NA | NA | 0.022  | 0.983 | NA | NA | 0.155  | 0.851 |
| NM_001177599| SUCLG2      | NA        | NA       | NA | NA | NA | NA | 0.139  | 0.800 | NA | NA | -0.143 | 0.896 |
| NM_003355   | UCP2        | NA        | NA       | NA | NA | NA | NA | -0.751 | 0.017 | NA | NA | 0.594  | 0.068 |
**Supplementary Table S3.** Quantitative data related to the transcriptomic profiles of the electron transport chain machinery and related mitochondrial carriers in human islets upon metabolic stress. NA: Not applicable (condition not tested); ND: not detected.

| Accession (NCBI Ref. Sequence) | Gene symbol | Donor #1 | | | Donor #2 | | | Donor #3 | | | Donor #4 | | | Donor #5 | | |
|-------------------------------|-------------|---------|----|----|---------|----|----|---------|----|----|---------|----|----|---------|----|----|---------|----|
| NM_001001937                  | ATP5A1      | -0.242  | 0.489 | 0.037 | 0.972 | NA | NA | -0.265 | 0.491 | NA | NA | NA | NA | NA | NA | NA |
| NM_001686                     | ATP5B       | 0.177   | 0.637 | 0.139 | 0.798 | NA | NA | 0.099 | 0.852 | NA | NA | NA | NA | NA | NA | NA |
| NM_005174                     | ATP5C1      | -0.089  | 0.860 | 0.270 | 0.560 | NA | NA | -0.252 | 0.544 | NA | NA | NA | NA | NA | NA | NA |
| NM_001687                     | ATP5D       | 0.892   | 0.075 | 0.670 | 0.120 | NA | NA | -0.118 | 0.837 | NA | NA | NA | NA | NA | NA | NA |
| NM_001688                     | ATP5F1      | -0.331  | 0.371 | -0.088 | 0.899 | NA | NA | -0.239 | 0.575 | NA | NA | NA | NA | NA | NA | NA |
| NM_005175                     | ATP5G1      | 0.321   | 0.642 | 0.877 | 0.057 | NA | NA | 0.152 | 0.801 | NA | NA | NA | NA | NA | NA | NA |
| NM_001002031                  | ATP5G2      | 0.762   | 0.018 | 0.257 | 0.579 | NA | NA | 0.214 | 0.613 | NA | NA | NA | NA | NA | NA | NA |
| Olea                          | ATP5G3      | -0.167  | 0.715 | 0.111 | 0.863 | NA | NA | 0.162 | 0.728 | NA | NA | NA | NA | NA | NA | NA |
| NM_006356                     | ATP5H       | -0.113  | 0.844 | 0.249 | 0.641 | NA | NA | 0.309 | 0.455 | NA | NA | NA | NA | NA | NA | NA |
| NM_007100                     | ATP5I       | 0.167   | 0.847 | 0.489 | 0.345 | NA | NA | 0.400 | 0.402 | NA | NA | NA | NA | NA | NA | NA |
| NM_004889                     | ATP5J2      | -0.246  | 0.584 | 0.449 | 0.305 | NA | NA | 0.575 | 0.091 | NA | NA | NA | NA | NA | NA | NA |
| NM_006476                     | ATP5L       | -0.219  | 0.573 | 0.053 | 0.948 | NA | NA | -0.010 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001697                     | ATP5O       | -0.473  | 0.180 | -0.005 | 1.000 | NA | NA | -0.258 | 0.542 | NA | NA | NA | NA | NA | NA | NA |
| NM_001003805                  | ATP5S       | -0.142  | 0.924 | -0.043 | 0.992 | NA | NA | -0.292 | 0.575 | NA | NA | NA | NA | NA | NA | NA |
| NM_178190                     | ATP1F1      | -0.312  | 0.489 | 0.248 | 0.630 | NA | NA | 0.188 | 0.680 | NA | NA | NA | NA | NA | NA | NA |
| NM_001162862                  | COX11       | -0.600  | 0.302 | -0.393 | 0.538 | NA | NA | -0.285 | 0.498 | NA | NA | NA | NA | NA | NA | NA |
| NM_078470                     | COX15       | 0.016   | 1.000 | -0.393 | 0.387 | NA | NA | -0.042 | 0.958 | NA | NA | NA | NA | NA | NA | NA |
| NM_005694                     | COX17       | -0.091  | 0.919 | 0.347 | 0.495 | NA | NA | 0.083 | 0.899 | NA | NA | NA | NA | NA | NA | NA |
| NM_001861                     | COX4I1      | -0.272  | 0.447 | 0.374 | 0.360 | NA | NA | 0.270 | 0.484 | NA | NA | NA | NA | NA | NA | NA |
| NM_004255                     | COX5A       | 0.183   | 0.747 | -0.006 | 1.000 | NA | NA | -0.128 | 0.819 | NA | NA | NA | NA | NA | NA | NA |
| NM_001862                     | COX5B       | 1.358   | 0.000 | 0.792 | 0.038 | NA | NA | 0.277 | 0.495 | NA | NA | NA | NA | NA | NA | NA |
| NM_004373                     | COX6A1      | 0.274   | 0.627 | 0.369 | 0.465 | NA | NA | 0.027 | 0.983 | NA | NA | NA | NA | NA | NA | NA |
| Gene Symbol | Enzyme Name | Value 1  | Value 2  | Value 3  | Value 4  | Value 5  | Value 6  | Value 7  | Value 8  | Value 9  | Value 10 | Value 11 | Value 12 |
|-------------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| NM_001863   | COX6B1      | -0.074  | 0.910   | 0.479   | 0.244   | NA      | NA      | 0.035   | 0.971   | NA      | NA      | NA      | NA      |
| NM_004374   | COX6C       | -0.431  | 0.246   | 0.207   | 0.692   | NA      | NA      | 0.132   | 0.806   | NA      | NA      | NA      | NA      |
| NM_001864   | COX7A1      | 0.668   | 0.638   | -0.131  | 0.935   | NA      | NA      | 0.171   | 0.815   | NA      | NA      | NA      | NA      |
| NM_001865   | COX7A2      | -0.541  | 0.107   | 0.408   | 0.341   | NA      | NA      | 0.098   | 0.862   | NA      | NA      | NA      | NA      |
| NM_004718   | COX7A2L     | -0.176  | 0.666   | 0.085   | 0.899   | NA      | NA      | -0.016  | 0.997   | NA      | NA      | NA      | NA      |
| NM_001866   | COX7B       | -0.555  | 0.122   | 0.255   | 0.617   | NA      | NA      | 0.343   | 0.389   | NA      | NA      | NA      | NA      |
| NM_001867   | COX7C       | -0.120  | 0.796   | 0.336   | 0.447   | NA      | NA      | 0.145   | 0.761   | NA      | NA      | NA      | NA      |
| NM_004074   | COX8A       | 1.761   | 0.000   | 0.571   | 0.129   | NA      | NA      | 0.274   | 0.477   | NA      | NA      | NA      | NA      |
| NM_004541   | NDUFA1      | -0.047  | 0.982   | 0.587   | 0.158   | NA      | NA      | 0.090   | 0.883   | NA      | NA      | NA      | NA      |
| NM_004544   | NDUFA10     | 0.139   | 0.782   | 0.204   | 0.692   | NA      | NA      | -0.142  | 0.777   | NA      | NA      | NA      | NA      |
| NM_001258338| NDUFA12     | -0.268  | 0.571   | 0.301   | 0.557   | NA      | NA      | -0.170  | 0.733   | NA      | NA      | NA      | NA      |
| NM_002488   | NDUFA2      | 0.151   | 0.809   | 0.691   | 0.119   | NA      | NA      | 0.163   | 0.748   | NA      | NA      | NA      | NA      |
| NM_004542   | NDUFA3      | 0.971   | 0.092   | 0.390   | 0.459   | NA      | NA      | -0.067  | 0.940   | NA      | NA      | NA      | NA      |
| NM_002489   | NDUFA4      | -0.481  | 0.253   | 0.229   | 0.703   | NA      | NA      | 0.391   | 0.309   | NA      | NA      | NA      | NA      |
| NM_001291304| NDUFA5      | -0.816  | 0.005   | 0.117   | 0.856   | NA      | NA      | -0.375  | 0.300   | NA      | NA      | NA      | NA      |
| NM_002490   | NDUFA6      | -0.119  | 0.808   | 0.435   | 0.328   | NA      | NA      | 0.032   | 0.976   | NA      | NA      | NA      | NA      |
| NM_005001   | NDUFA7      | 0.834   | 0.140   | 0.578   | 0.180   | NA      | NA      | 0.259   | 0.597   | NA      | NA      | NA      | NA      |
| NM_014222   | NDUFA8      | -0.323  | 0.518   | 0.378   | 0.439   | NA      | NA      | 0.102   | 0.865   | NA      | NA      | NA      | NA      |
| NM_005002   | NDUFA9      | -0.232  | 0.594   | 0.406   | 0.371   | NA      | NA      | -0.242  | 0.578   | NA      | NA      | NA      | NA      |
| NM_005003   | NDUFAB1     | -0.395  | 0.374   | 0.550   | 0.203   | NA      | NA      | 0.156   | 0.761   | NA      | NA      | NA      | NA      |
| NM_004545   | NDUFB1      | -0.503  | 0.303   | 0.107   | 0.902   | NA      | NA      | 0.258   | 0.658   | NA      | NA      | NA      | NA      |
| NM_004548   | NDUFB10     | 0.496   | 0.258   | 0.580   | 0.165   | NA      | NA      | -0.023  | 0.990   | NA      | NA      | NA      | NA      |
| NM_004546   | NDUFB2      | 0.467   | 0.301   | 0.515   | 0.245   | NA      | NA      | 0.196   | 0.678   | NA      | NA      | NA      | NA      |
| NM_002491   | NDUFB3      | -0.545  | 0.204   | -0.177  | 0.792   | NA      | NA      | -0.057  | 0.956   | NA      | NA      | NA      | NA      |
| NM_004547   | NDUFB4      | 0.311   | 0.426   | 0.284   | 0.542   | NA      | NA      | -0.002  | 1.000   | NA      | NA      | NA      | NA      |
| NM_001199958| NDUFB5      | -0.497  | 0.145   | 0.601   | 0.131   | NA      | NA      | -0.063  | 0.927   | NA      | NA      | NA      | NA      |
| NM_002493   | NDUFB6      | 0.372   | 0.429   | 0.488   | 0.279   | NA      | NA      | -0.025  | 0.992   | NA      | NA      | NA      | NA      |
| NM_004146   | NDUFB7      | 1.200   | 0.002   | 0.535   | 0.191   | NA      | NA      | 0.347   | 0.352   | NA      | NA      | NA      | NA      |
| Gene 1 | Gene 2 | Gene 3 | Gene 4 | Gene 5 | Gene 6 | Gene 7 | Gene 8 | Gene 9 | Gene 10 | Gene 11 | Gene 12 | Gene 13 | Gene 14 | Gene 15 | Gene 16 | Gene 17 | Gene 18 | Gene 19 | Gene 20 |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| NM_005004 | NDUFB8 | 0.140  | 0.792  | 0.452  | 0.288  | NA     | NA     | -0.059 | 0.929  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_005005 | NDUFB9 | -0.061 | 0.927  | 0.309  | 0.506  | NA     | NA     | -0.071 | 0.913  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001184990 | NDUFC1 | 0.475  | 0.321  | 0.476  | 0.314  | NA     | NA     | 0.109  | 0.870  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001204055 | NDUFC2 | -0.754 | 0.026  | -0.058 | 0.949  | NA     | NA     | 0.196  | 0.685  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001199981 | NDUFS1 | -0.299 | 0.436  | -0.233 | 0.653  | NA     | NA     | -0.395 | 0.257  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_004550 | NDUFS2 | -0.024 | 1.000  | 0.030  | 0.993  | NA     | NA     | 0.098  | 0.862  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_004551 | NDUFS3 | -0.038 | 0.996  | 0.137  | 0.836  | NA     | NA     | -0.029 | 0.987  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_002495 | NDUFS4 | -0.295 | 0.570  | 0.187  | 0.782  | NA     | NA     | -0.190 | 0.724  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_004552 | NDUFS5 | -0.540 | 0.099  | 0.283  | 0.541  | NA     | NA     | 0.165  | 0.743  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_004553 | NDUFS6 | 0.599  | 0.196  | 0.447  | 0.348  | NA     | NA     | -0.244 | 0.569  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_024407 | NDUFS7 | 1.302  | 0.003  | 0.941  | 0.021  | NA     | NA     | 0.271  | 0.509  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_002496 | NDUFS8 | 1.240  | 0.002  | 0.546  | 0.206  | NA     | NA     | 0.205  | 0.660  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001166102 | NDUFV1 | 0.441  | 0.262  | 0.633  | 0.105  | NA     | NA     | 0.082  | 0.889  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_021074 | NDUFV2 | -0.300 | 0.485  | 0.064  | 0.941  | NA     | NA     | 0.051  | 0.947  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_021075 | NDUFV3 | 0.571  | 0.197  | 0.084  | 0.936  | NA     | NA     | 0.089  | 0.892  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_004589 | SCO1   | 0.285  | 0.589  | 0.117  | 0.876  | NA     | NA     | -0.001 | 1.000  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001294332 | SDHA   | -0.219 | 0.627  | 0.026  | 0.995  | NA     | NA     | -0.189 | 0.679  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_003000 | SDHB   | 0.140  | 0.801  | 0.444  | 0.308  | NA     | NA     | 0.011  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_003001 | SDHC   | -0.148 | 0.795  | -0.231 | 0.704  | NA     | NA     | 0.267  | 0.538  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001276503 | SDHD   | -0.169 | 0.728  | 0.165  | 0.793  | NA     | NA     | -0.190 | 0.697  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001282198 | SLC25A14 | -0.783 | 0.090  | 0.136  | 0.875  | NA     | NA     | -0.031 | 0.986  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001204052 | SLC25A27 | -0.610 | 0.137  | -0.418 | 0.483  | NA     | NA     | 0.348  | 0.400  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_002635 | SLC25A3 | -0.153 | 0.700  | 0.042  | 0.966  | NA     | NA     | -0.099 | 0.854  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001151 | SLC25A4 | -0.020 | 1.000  | 0.233  | 0.642  | NA     | NA     | -0.107 | 0.842  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_001152 | SLC25A5 | -0.294 | 0.403  | 0.225  | 0.639  | NA     | NA     | -0.232 | 0.567  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_003172 | SURF1  | -0.212 | 0.731  | 0.361  | 0.491  | NA     | NA     | 0.221  | 0.618  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_003355 | UCP2   | 0.167  | 0.829  | 0.252  | 0.685  | NA     | NA     | 0.257  | 0.619  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| NM_013387 | UQCR10 | 0.601  | 0.102  | 0.391  | 0.382  | NA     | NA     | 0.287  | 0.480  | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     |
| GenBank ID     | Protein Name | UQCR11 | UQCRB | UQCR1 | UQCR2 | UQCRFS1 | UQCRH | UQCRQ |
|---------------|--------------|--------|-------|--------|--------|----------|--------|--------|
| NM_006830     |              | 0.875  | -0.519| 0.443  | -0.387 | -0.488   | 0.177  | -0.116 |
| NM_006294     |              | 0.013  | 0.102 | 0.232  | 0.271  | 0.194    | 0.729  | 0.806  |
| NM_003365     |              | 0.476  | 0.090 | 0.284  | 0.151  | 0.183    | 0.762  | 0.287  |
| NM_003366     |              | 0.248  | 0.891 | 0.545  | 0.792  | 0.751    | 0.672  | 0.534  |
| NM_006003     |              | NA     | NA    | NA     | NA     | NA       | NA     | NA     |
| NM_001297566  |              | 0.191  | NA    | NA     | NA     | NA       | NA     | NA     |
| NM_014402     |              | 0.672  | NA    | NA     | NA     | NA       | NA     | NA     |

| GenBank ID     | Protein Name | UQCR11 | UQCRB | UQCR1 | UQCR2 | UQCRFS1 | UQCRH | UQCRQ |
|---------------|--------------|--------|-------|--------|--------|----------|--------|--------|
| NM_006830     |              | 0.875  | -0.519| 0.443  | -0.387 | -0.488   | 0.177  | -0.116 |
| NM_006294     |              | 0.013  | 0.102 | 0.232  | 0.271  | 0.194    | 0.729  | 0.806  |
| NM_003365     |              | 0.476  | 0.090 | 0.284  | 0.151  | 0.183    | 0.762  | 0.287  |
| NM_003366     |              | 0.248  | 0.891 | 0.545  | 0.792  | 0.751    | 0.672  | 0.534  |
| NM_006003     |              | NA     | NA    | NA     | NA     | NA       | NA     | NA     |
| NM_001297566  |              | 0.191  | NA    | NA     | NA     | NA       | NA     | NA     |
| NM_014402     |              | 0.672  | NA    | NA     | NA     | NA       | NA     | NA     |

| NM_001001937  | ATP5A1       | -0.088 | 0.870 | 0.006  | 1.000  | NA       | NA     | NA     |
| NM_001686     | ATP5B        | 0.272  | 0.449 | 0.039  | 1.000  | NA       | NA     | NA     |
| NM_005174     | ATP5C1       | 0.254  | 0.522 | -0.015 | 1.000  | NA       | NA     | NA     |
| NM_001687     | ATP5D        | 1.104  | 0.018 | 0.512  | 1.000  | NA       | NA     | NA     |
| NM_001688     | ATP5F1       | 0.095  | 0.880 | -0.010 | 1.000  | NA       | NA     | NA     |
| NM_005175     | ATP5G1       | 1.028  | 0.028 | 0.579  | 1.000  | NA       | NA     | NA     |
| NM_001002031  | ATP5G2       | 0.850  | 0.009 | 0.196  | 1.000  | NA       | NA     | NA     |
| NM_001689     | ATP5G3       | 0.357  | 0.359 | 0.030  | 1.000  | NA       | NA     | NA     |
| NM_006356     | ATP5H        | 0.568  | 0.135 | 0.123  | 1.000  | NA       | NA     | NA     |
| NM_007100     | ATP5I        | 0.094  | 0.973 | 0.681  | 0.900  | NA       | NA     | NA     |
| NM_004889     | ATP5J2       | 0.016  | 1.000 | 0.194  | 1.000  | NA       | NA     | NA     |
| NM_006476     | ATP5L        | 0.128  | 0.797 | -0.029 | 1.000  | NA       | NA     | NA     |
| NM_001697     | ATP5O        | 0.053  | 0.956 | -0.196 | 1.000  | NA       | NA     | NA     |
| NM_001003805  | ATP5S        | -0.402 | 0.557 | -0.348 | 1.000  | NA       | NA     | NA     |
| NM_178190     | ATP5F1       | 0.355  | 0.424 | -0.127 | 1.000  | NA       | NA     | NA     |
| NM_001162862  | COX11        | 0.063  | 0.983 | 0.242  | 1.000  | NA       | NA     | NA     |
| NM_078470     | COX15        | 0.226  | 0.628 | -0.275 | 1.000  | NA       | NA     | NA     |
| NM_005694     | COX17        | 0.279  | 0.617 | 0.214  | 1.000  | NA       | NA     | NA     |
| NM_001861     | COX4I1       | -0.127 | 0.799 | 0.067  | 1.000  | NA       | NA     | NA     |
| NM_004255     | COX5A        | -0.038 | 0.999 | -0.067 | 1.000  | NA       | NA     | NA     |
| NM_001862     | COX5B        | 1.481  | 0.000 | 0.654  | 0.751  | NA       | NA     | NA     |
|         | Gene  | Value1 | Value2 | Value3 | Value4 | Value5 | Value6 | Value7 | Value8 | Value9 | Value10 |
|---------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| NM_004373 | COX6A1 | 0.589  | 0.194  | 0.412  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_001863 | COX6B1 | 0.177  | 0.724  | 0.326  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_004374 | COX6C  | 0.169  | 0.734  | -0.135 | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_001864 | COX7A1 | 0.141  | 1.000  | -0.217 | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_001865 | COX7A2 | -0.083 | 0.897  | 0.401  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_004718 | COX7A2L| 0.118  | 0.819  | -0.005 | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_001866 | COX7B  | -0.242 | 0.603  | 0.017  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_001867 | COX7C  | 0.307  | 0.418  | 0.138  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_001258338 | NDUFA12 | 0.208  | 0.699  | 0.126  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_002488 | NDUFA2 | -0.053 | 0.972  | 0.298  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_004544 | NDUFA10| 0.359  | 0.363  | 0.063  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_001291304 | NDUFA5 | -0.067 | 0.928  | 0.112  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_002490 | NDUFA6 | 0.292  | 0.482  | 0.221  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_005001 | NDUFA7 | 1.487  | 0.001  | 0.255  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_014222 | NDUFA8 | 0.218  | 0.705  | 0.411  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_005002 | NDUFA9 | -0.054 | 0.955  | -0.120 | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_005003 | NDUFAB1| 0.157  | 0.806  | 0.366  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_004545 | NDUFB1 | 0.090  | 0.944  | 0.283  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_004548 | NDUFB10| 0.585  | 0.166  | 0.273  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_004546 | NDUFB2 | 0.789  | 0.045  | 0.175  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_002491 | NDUFB3 | -0.477 | 0.302  | -0.071 | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_004547 | NDUFB4 | 0.485  | 0.179  | 0.307  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_001199958 | NDUFB5 | 0.073  | 0.918  | 0.329  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_002493 | NDUFB6 | 0.806  | 0.040  | 0.105  | 1.000  | NA     | NA     | NA     | NA     | NA     | NA      |
| NM_004146 | NDUFB7 | 1.325 | 0.001 | -0.025 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_005004 | NDUFB8 | 0.314 | 0.486 | 0.456 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_005005 | NDUFB9 | 0.153 | 0.768 | 0.404 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001184990 | NDUFC1 | 0.378 | 0.497 | 0.209 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001204055 | NDUFC2 | -0.089 | 0.900 | -0.241 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001199981 | NDUFS1 | -0.075 | 0.923 | 0.172 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_004550 | NDUFS2 | -0.257 | 0.527 | 0.016 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001199981 | NDUFS3 | 0.434 | 0.318 | -0.207 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001199981 | NDUFS4 | 0.378 | 0.497 | 0.456 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001199981 | NDUFS5 | 0.153 | 0.785 | 0.203 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001199981 | NDUFS6 | 0.314 | 0.486 | 0.456 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_004550 | NDUFS7 | -0.066 | 0.967 | 0.045 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_004550 | NDUFS8 | 1.242 | 0.002 | 0.213 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001166102 | NDUFV1 | 0.461 | 0.253 | 0.270 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_021074 | NDUFV2 | -0.079 | 0.918 | 0.059 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_021075 | NDUFV3 | 0.433 | 0.398 | 0.078 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_004589 | SCO1 | 0.390 | 0.435 | -0.071 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001294332 | SDHA | -0.225 | 0.663 | 0.043 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_003000 | SDHB | 0.195 | 0.724 | 0.136 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_003001 | SDHC | -0.371 | 0.466 | -0.261 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001276503 | SDHD | 0.060 | 0.959 | 0.088 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001282198 | SLC25A14 | 0.131 | 0.878 | 0.421 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001204052 | SLC25A27 | -0.266 | 0.600 | -0.666 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_002635 | SLC25A3 | 0.111 | 0.823 | -0.075 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001151 | SLC25A4 | 0.292 | 0.481 | 0.085 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_001152 | SLC25A5 | -0.085 | 0.886 | 0.179 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_003172 | SURF1 | 0.158 | 0.819 | 0.004 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| NM_003355 | UCP2 | 0.506 | 0.413 | -0.048 | 1.000 | NA | NA | NA | NA | NA | NA | NA |
| Gene               | NM_013387 | NM_006830 | NM_006294 | NM_003365 | NM_003366 | NM_006003 | NM_001297566 | NM_014402 |
|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|-----------|
|                    | UQCR10    | UQCR11    | UQCRB     | UQRC1     | UQRC2     | UQRF5S1   | UQCRH        | UQCRQ     |
|                    | 0.680     | 1.069     | -0.200    | 0.675     | -0.023    | -0.210    | 0.252        | 0.510     |
|                    | 0.060     | 0.002     | 0.632     | 0.047     | 1.000     | 0.667     | 0.640        | 0.127     |
|                    | 0.166     | 0.150     | 0.053     | 0.190     | 1.000     | 0.018     | 0.090        | 0.101     |
|                    | 1.000     | 1.000     | 1.000     | 1.000     | 1.000     | 1.000     | 1.000        | 1.000     |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
|                    | NA        | NA        | NA        | NA        | NA        | NA        | NA           | NA        |
| Gene Symbol | Protein Symbol | Value1 | Value2 | Value3 | Value4 | Value5 | Value6 |
|-------------|---------------|--------|--------|--------|--------|--------|--------|
| NM_001862   | COX5B         | 1.615  | 0.000  | 0.945  | 0.004  | -0.449 | 0.188  |
| NM_004373   | COX6A1        | 0.446  | 0.319  | 0.633  | 0.102  | -0.419 | 0.242  |
| NM_001863   | COX6B1        | 0.275  | 0.450  | 0.842  | 0.007  | -0.415 | 0.253  |
| NM_004374   | COX6C         | -0.102 | 0.835  | 0.471  | 0.190  | -0.683 | 0.017  |
| NM_001864   | COX7A1        | 1.208  | 0.201  | 0.308  | 0.765  | -0.018 | 1.000  |
| NM_001865   | COX7A2        | -0.079 | 0.871  | 0.987  | 0.001  | -0.347 | 0.355  |
| NM_004718   | COX7A2L       | 0.097  | 0.816  | 0.148  | 0.745  | -0.061 | 0.943  |
| NM_001866   | COX7B         | -0.076 | 0.882  | 0.425  | 0.276  | -0.600 | 0.050  |
| NM_001867   | COX7C         | 0.231  | 0.507  | 0.527  | 0.110  | -0.563 | 0.070  |
| NM_004074   | COX8A         | 1.755  | 0.000  | 0.663  | 0.033  | -0.605 | 0.043  |
| NM_004541   | NDUF A1       | 0.351  | 0.374  | 1.060  | 0.001  | -0.498 | 0.131  |
| NM_004544   | NDUF A10      | 0.129  | 0.772  | 0.207  | 0.648  | -0.022 | 0.996  |
| NM_001258338| NDUF A12      | 0.058  | 0.933  | 0.557  | 0.147  | -0.081 | 0.917  |
| NM_002488   | NDUF A2       | 0.290  | 0.570  | 1.013  | 0.006  | -0.368 | 0.344  |
| NM_004542   | NDUF A3       | 1.375  | 0.006  | 0.236  | 0.665  | -0.414 | 0.269  |
| NM_002489   | NDUF A4       | -0.161 | 0.734  | 0.249  | 0.630  | -0.260 | 0.558  |
| NM_001291304| NDUF A5       | -0.462 | 0.130  | 0.197  | 0.671  | -0.090 | 0.900  |
| NM_002490   | NDUF A6       | 0.029  | 0.975  | 0.417  | 0.297  | 0.020  | 0.998  |
| NM_005001   | NDUF A7       | 1.299  | 0.005  | 0.677  | 0.072  | -0.772 | 0.007  |
| NM_014222   | NDUF A8       | -0.021 | 1.000  | 0.380  | 0.403  | -0.068 | 0.939  |
| NM_005002   | NDUF A9       | -0.378 | 0.293  | 0.204  | 0.687  | -0.158 | 0.774  |
| NM_005003   | NDUF A B1     | -0.143 | 0.809  | 0.712  | 0.051  | -0.235 | 0.611  |
| NM_004545   | NDUF B1       | 0.205  | 0.705  | 0.798  | 0.053  | -0.737 | 0.014  |
| NM_004548   | NDUF B10      | 0.651  | 0.092  | 0.811  | 0.018  | -0.188 | 0.715  |
| NM_004546   | NDUF B2       | 0.907  | 0.011  | 0.811  | 0.022  | -0.377 | 0.303  |
| NM_002491   | NDUF B3       | 0.042  | 0.965  | 0.332  | 0.509  | -0.572 | 0.078  |
| NM_004547   | NDUF B4       | 0.303  | 0.398  | 0.450  | 0.207  | -0.381 | 0.303  |
| NM_001199958| NDUF B5       | -0.279 | 0.425  | 0.751  | 0.025  | -0.328 | 0.410  |
| Gene | Description | Value1 | Value2 | Value3 | Value4 | Value5 | Value6 | Value7 | Value8 | Value9 | Value10 | Value11 |
|------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|---------|
| NM_002493 | NDUFB6 | 0.572  | 0.146  | 0.482  | 0.256  | -0.341 | 0.381  | 0.354  | 0.252  | NA     | NA       |
| NM_004146 | NDUFB7 | 1.348  | 0.000  | 0.436  | 0.263  | -0.350 | 0.361  | 0.419  | 0.142  | NA     | NA       |
| NM_005004 | NDUFB8 | 0.347  | 0.362  | 0.625  | 0.068  | -0.306 | 0.442  | -0.275 | 0.354  | NA     | NA       |
| NM_005005 | NDUFB9 | 0.268  | 0.453  | 0.642  | 0.048  | -0.321 | 0.418  | 1.132  | 0.000  | NA     | NA       |
| NM_001184990 | NDUFC1 | 0.341  | 0.476  | 0.387  | 0.409  | -0.235 | 0.612  | 0.305  | 0.366  | NA     | NA       |
| NM_001204055 | NDUFC2 | -0.279 | 0.453  | 0.287  | 0.514  | -0.189 | 0.714  | -0.375 | 0.230  | NA     | NA       |
| NM_001199981 | NDUFS1 | -0.232 | 0.536  | -0.407 | 0.310  | -0.216 | 0.656  | 0.172  | 0.599  | NA     | NA       |
| NM_004550 | NDUFS2 | 0.326  | 0.378  | 0.327  | 0.441  | 0.057  | 0.950  | -0.261 | 0.396  | NA     | NA       |
| NM_004551 | NDUFS3 | 0.257  | 0.549  | 0.484  | 0.232  | -0.212 | 0.674  | 0.694  | 0.012  | NA     | NA       |
| NM_002495 | NDUFS4 | -0.130 | 0.831  | 0.653  | 0.113  | -0.241 | 0.616  | 0.468  | 0.123  | NA     | NA       |
| NM_004552 | NDUFS5 | -0.170 | 0.653  | 0.789  | 0.009  | -0.272 | 0.525  | 0.219  | 0.504  | NA     | NA       |
| NM_004553 | NDUFS6 | 0.387  | 0.447  | 0.417  | 0.342  | -0.516 | 0.135  | 0.792  | 0.002  | NA     | NA       |
| NM_024407 | NDUFS7 | 0.540  | 0.370  | 0.798  | 0.052  | -0.365 | 0.353  | 0.912  | 0.000  | NA     | NA       |
| NM_002496 | NDUFS8 | 1.332  | 0.000  | 0.617  | 0.101  | -0.377 | 0.326  | 0.484  | 0.090  | NA     | NA       |
| NM_001166102 | NDUVF1 | 0.453  | 0.206  | 0.415  | 0.290  | -0.058 | 0.951  | 0.492  | 0.067  | NA     | NA       |
| NM_021074 | NDUVF2 | -0.187 | 0.671  | 0.753  | 0.026  | 0.075  | 0.925  | -0.061 | 0.890  | NA     | NA       |
| NM_021075 | NDUVF3 | 0.362  | 0.435  | 0.095  | 0.927  | -0.187 | 0.739  | 0.936  | 0.000  | NA     | NA       |
| NM_004589 | SCO1   | 0.271  | 0.589  | -0.010 | 1.000  | -0.070 | 0.943  | 0.642  | 0.022  | NA     | NA       |
| NM_001294332 | SDHA | -0.128 | 0.780  | 0.195  | 0.702  | 0.350  | 0.357  | 0.196  | 0.543  | NA     | NA       |
| NM_003000 | SDHB   | 0.405  | 0.259  | 0.365  | 0.371  | -0.206 | 0.677  | 0.519  | 0.059  | NA     | NA       |
| NM_003001 | SDHC   | -0.243 | 0.615  | -0.193 | 0.766  | -0.212 | 0.675  | -0.124 | 0.744  | NA     | NA       |
| NM_001276503 | SDHD | -0.316 | 0.412  | 0.333  | 0.449  | -0.125 | 0.843  | 0.369  | 0.221  | NA     | NA       |
| NM_001282198 | SLC25A14 | -0.128 | 0.829  | 0.960  | 0.018  | -0.277 | 0.608  | 0.580  | 0.058  | NA     | NA       |
| NM_001204052 | SLC25A27 | -0.573 | 0.134  | 0.326  | 0.560  | -0.055 | 0.968  | -0.098 | 0.811  | NA     | NA       |
| NM_002635 | SLC25A3 | -0.534 | 0.158  | 0.332  | 0.344  | -0.253 | 0.562  | -0.122 | 0.716  | NA     | NA       |
| NM_001151 | SLC25A4 | 0.198  | 0.607  | 0.506  | 0.149  | 0.017  | 1.000  | 0.354  | 0.207  | NA     | NA       |
| NM_001152 | SLC25A5 | -0.069 | 0.880  | 0.313  | 0.393  | -0.120 | 0.845  | -0.130 | 0.697  | NA     | NA       |
| NM_003172 | SURF1  | -0.108 | 0.866  | 0.382  | 0.406  | 0.099  | 0.890  | 0.465  | 0.101  | NA     | NA       |
| Gene ID          | Description | G25+Olea+Palm | 1.016 | 0.025 | 0.950 | 0.012 | -0.534 | 0.179 | -0.823 | 0.017 | NA       | NA       |
|-----------------|-------------|---------------|-------|-------|-------|-------|--------|-------|--------|-------|----------|----------|
| NM_003355       | UCP2        |               | 0.677 | 0.043 | 0.601 | 0.087 | -0.047 | 0.967 | 0.223  | 0.489 | NA       | NA       |
| NM_013387       | UQCR10      |               | 1.298 | 0.000 | 0.454 | 0.219 | -0.292 | 0.474 | 0.263  | 0.389 | NA       | NA       |
| NM_006830       | UQCR11      |               | -0.241 | 0.469 | 0.317 | 0.385 | -0.510 | 0.116 | 0.498  | 0.064 | NA       | NA       |
| NM_006294       | UQCRB       |               | 0.652  | 0.041 | 0.440 | 0.223 | 0.092  | 0.896 | 0.529  | 0.046 | NA       | NA       |
| NM_003365       | UQCRC1      |               | -0.122 | 0.774 | 0.123 | 0.821 | -0.102 | 0.885 | -0.115 | 0.745 | NA       | NA       |
| NM_003366       | UQCRC2      |               | -0.099 | 0.851 | 0.532 | 0.153 | 0.049  | 0.966 | 0.772  | 0.003 | NA       | NA       |
| NM_006003       | UQCRFS1     |               | 0.686  | 0.050 | 0.604 | 0.096 | -0.282 | 0.536 | -0.157 | 0.663 | NA       | NA       |
| NM_001297566    | UQCRH       |               | 0.337  | 0.294 | 0.801 | 0.008 | -0.503 | 0.115 | 0.662  | 0.012 | NA       | NA       |
| NM_0014402      | UQCRQ       |               | NA     | NA     | NA     | NA     | -0.206 | 0.669 | NA     | NA     | -0.364  | 0.471    |
| NM_001001937    | ATP5A1      |               | NA     | NA     | NA     | NA     | NA     | 0.041 | 0.966  | NA     | NA       | -0.025  | 1.000    |
| NM_001686       | ATP5B       |               | NA     | NA     | NA     | NA     | NA     | -0.024 | 0.988  | NA     | NA       | -0.219  | 0.823    |
| NM_005174       | ATP5C1      |               | NA     | NA     | NA     | NA     | NA     | 0.059  | 0.949  | NA     | NA       | -0.222  | 0.842    |
| NM_001688       | ATP5D       |               | NA     | NA     | NA     | NA     | NA     | -0.114 | 0.858  | NA     | NA       | -0.221  | 0.826    |
| NM_005175       | ATP5F1      |               | NA     | NA     | NA     | NA     | NA     | 0.138  | 0.822  | NA     | NA       | 0.068   | 1.000    |
| NM_001002031    | ATP5G2      |               | NA     | NA     | NA     | NA     | NA     | -0.393 | 0.277  | NA     | NA       | -0.294  | 0.660    |
| NM_001689       | ATP5G3      |               | NA     | NA     | NA     | NA     | NA     | -0.062 | 0.943  | NA     | NA       | -0.231  | 0.802    |
| NM_006356       | ATP5H       |               | NA     | NA     | NA     | NA     | NA     | -0.176 | 0.747  | NA     | NA       | -0.216  | 0.840    |
| NM_007100       | ATP5I       |               | NA     | NA     | NA     | NA     | NA     | -0.149 | 0.805  | NA     | NA       | -0.022  | 1.000    |
| NM_004889       | ATP5J2      |               | NA     | NA     | NA     | NA     | NA     | -0.204 | 0.687  | NA     | NA       | -0.023  | 1.000    |
| NM_006476       | ATP5L       |               | NA     | NA     | NA     | NA     | NA     | -0.361 | 0.332  | NA     | NA       | -0.142  | 0.941    |
| NM_001697       | ATP5O       |               | NA     | NA     | NA     | NA     | NA     | -0.003 | 1.000  | NA     | NA       | -0.021  | 1.000    |
| NM_001003805    | ATP5S       |               | NA     | NA     | NA     | NA     | NA     | -0.248 | 0.675  | NA     | NA       | -0.092  | 1.000    |
| NM_178190       | ATP5P1      |               | NA     | NA     | NA     | NA     | NA     | -0.141 | 0.811  | NA     | NA       | -0.142  | 0.943    |
| NM_001162862    | COX11       |               | NA     | NA     | NA     | NA     | 0.124  | 0.867  | NA     | NA       | -0.038  | 1.000    |
| NM_0078470      | COX15       |               | NA     | NA     | NA     | NA     | 0.060  | 0.946  | NA     | NA       | -0.177  | 0.908    |
| NM_005694       | COX17       |               | NA     | NA     | NA     | NA     | -0.110 | 0.867  | NA     | NA       | -0.195  | 0.870    |
| NM_001861       | COX41       |               | NA     | NA     | NA     | NA     | 0.049  | 0.958  | NA     | NA       | -0.137  | 0.945    |
| NM_004255  | COX5A | NA | NA | NA | NA | -0.017 | 1.000 | NA | NA | -0.337 | 0.596 |
|------------|-------|----|----|----|----|--------|-------|----|----|--------|-------|
| NM_001862  | COX5B | NA | NA | NA | NA | -0.298 | 0.473 | NA | NA | -0.234 | 0.790 |
| NM_004373  | COX6A1| NA | NA | NA | NA | -0.177 | 0.744 | NA | NA | -0.257 | 0.754 |
| NM_001863  | COX6B1| NA | NA | NA | NA | -0.085 | 0.908 | NA | NA | -0.300 | 0.667 |
| NM_004374  | COX6C | NA | NA | NA | NA | -0.388 | 0.287 | NA | NA | -0.540 | 0.125 |
| NM_001864  | COX7A1| NA | NA | NA | NA | -0.406 | 0.337 | NA | NA | 0.014  | 1.000 |
| NM_001865  | COX7A2| NA | NA | NA | NA | -0.194 | 0.701 | NA | NA | -0.120 | 0.968 |
| NM_004718  | COX7A2L| NA | NA | NA | NA | -0.298 | 0.473 | NA | NA | -0.234 | 0.790 |
| NM_001866  | COX7B | NA | NA | NA | NA | -0.316 | 0.438 | NA | NA | -0.443 | 0.301 |
| NM_001867  | COX7C | NA | NA | NA | NA | -0.404 | 0.256 | NA | NA | -0.127 | 0.963 |
| NM_004541  | NDUFA1| NA | NA | NA | NA | -0.198 | 0.700 | NA | NA | -0.271 | 0.719 |
| NM_004544  | NDUFA10| NA | NA | NA | NA | -0.005 | 1.000 | NA | NA | -0.023 | 1.000 |
| NM_001258338| NDUFA12| NA | NA | NA | NA | -0.024 | 0.989 | NA | NA | 0.079  | 1.000 |
| NM_002488  | NDUFA2| NA | NA | NA | NA | -0.180 | 0.746 | NA | NA | 0.019  | 1.000 |
| NM_004542  | NDUFA3| NA | NA | NA | NA | -0.209 | 0.687 | NA | NA | -0.212 | 0.849 |
| NM_002489  | NDUFA4| NA | NA | NA | NA | 0.035  | 0.976 | NA | NA | -0.485 | 0.240 |
| NM_001291304| NDUFA5| NA | NA | NA | NA | -0.088 | 0.899 | NA | NA | 0.042  | 1.000 |
| NM_002490  | NDUFA6| NA | NA | NA | NA | 0.103  | 0.875 | NA | NA | 0.106  | 0.982 |
| NM_005001  | NDUFA7| NA | NA | NA | NA | -0.507 | 0.132 | NA | NA | -0.320 | 0.606 |
| NM_014222  | NDUFA8| NA | NA | NA | NA | -0.021 | 0.994 | NA | NA | -0.044 | 1.000 |
| NM_005002  | NDUFA9| NA | NA | NA | NA | -0.009 | 1.000 | NA | NA | -0.038 | 1.000 |
| NM_005003  | NDUFAB1| NA | NA | NA | NA | -0.097 | 0.887 | NA | NA | -0.042 | 1.000 |
| NM_004545  | NDUFB1| NA | NA | NA | NA | -0.397 | 0.309 | NA | NA | -0.537 | 0.149 |
| NM_004548  | NDUFB10| NA | NA | NA | NA | -0.143 | 0.808 | NA | NA | 0.048  | 1.000 |
| NM_004546  | NDUFB2| NA | NA | NA | NA | -0.345 | 0.368 | NA | NA | 0.036  | 1.000 |
| NM_002491  | NDUFB3| NA | NA | NA | NA | -0.273 | 0.555 | NA | NA | -0.513 | 0.183 |
| NM_004547  | NDUFB4| NA | NA | NA | NA | -0.119 | 0.849 | NA | NA | -0.378 | 0.457 |
| Gene ID          | Gene Symbol | Status 1 | Status 2 | Status 3 | Status 4 | Status 5 | Status 6 | Status 7 | Status 8 | Status 9 |
|------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| NM_001199958     | NDUFB5      | NA       | NA       | NA       | -0.150   | 0.796    | NA       | NA       | 0.009    | 1.000    |
| NM_002493       | NDUFB6      | NA       | NA       | NA       | -0.062   | 0.942    | NA       | NA       | -0.279   | 0.700    |
| NM_004146       | NDUFB7      | NA       | NA       | NA       | -0.258   | 0.567    | NA       | NA       | 0.062    | 1.000    |
| NM_005004       | NDUFB8      | NA       | NA       | NA       | -0.359   | 0.334    | NA       | NA       | 0.011    | 1.000    |
| NM_005005       | NDUFB9      | NA       | NA       | NA       | -0.245   | 0.595    | NA       | NA       | -0.069   | 1.000    |
| NM_001184990    | NDUFC1      | NA       | NA       | NA       | -0.138   | 0.818    | NA       | NA       | -0.301   | 0.649    |
| NM_001204055    | NDUFC2      | NA       | NA       | NA       | -0.143   | 0.809    | NA       | NA       | -0.066   | 1.000    |
| NM_001199981    | NDUFS1      | NA       | NA       | NA       | 0.096    | 0.890    | NA       | NA       | 0.003    | 1.000    |
| NM_004550       | NDUFS2      | NA       | NA       | NA       | 0.180    | 0.732    | NA       | NA       | -0.101   | 0.984    |
| NM_004551       | NDUFS3      | NA       | NA       | NA       | -0.084   | 0.913    | NA       | NA       | -0.084   | 1.000    |
| NM_002495       | NDUFS4      | NA       | NA       | NA       | -0.241   | 0.625    | NA       | NA       | -0.120   | 0.974    |
| NM_004552       | NDUFS5      | NA       | NA       | NA       | 0.015    | 1.000    | NA       | NA       | -0.273   | 0.715    |
| NM_004553       | NDUFS6      | NA       | NA       | NA       | -0.089   | 0.907    | NA       | NA       | -0.018   | 1.000    |
| NM_024407       | NDUFS7      | NA       | NA       | NA       | -0.232   | 0.642    | NA       | NA       | 0.079    | 1.000    |
| NM_002496       | NDUFS8      | NA       | NA       | NA       | -0.246   | 0.607    | NA       | NA       | -0.237   | 0.810    |
| NM_001166102    | NDUFS1      | NA       | NA       | NA       | -0.121   | 0.847    | NA       | NA       | -0.138   | 0.951    |
| NM_021074       | NDUFS2      | NA       | NA       | NA       | 0.134    | 0.821    | NA       | NA       | 0.001    | 1.000    |
| NM_021075       | NDUFS3      | NA       | NA       | NA       | -0.092   | 0.903    | NA       | NA       | -0.010   | 1.000    |
| NM_004589       | SCO1        | NA       | NA       | NA       | 0.276    | 0.573    | NA       | NA       | -0.003   | 1.000    |
| NM_001294332    | SDHA        | NA       | NA       | NA       | 0.226    | 0.638    | NA       | NA       | -0.043   | 1.000    |
| NM_003000       | SDHB        | NA       | NA       | NA       | -0.011   | 1.000    | NA       | NA       | -0.131   | 0.963    |
| NM_003001       | SDHC        | NA       | NA       | NA       | -0.013   | 1.000    | NA       | NA       | -0.153   | 0.932    |
| NM_001276503    | SDHD        | NA       | NA       | NA       | -0.060   | 0.946    | NA       | NA       | 0.082    | 1.000    |
| NM_001282198    | SLC25A14    | NA       | NA       | NA       | -0.315   | 0.545    | NA       | NA       | 0.097    | 0.996    |
| NM_001204052    | SLC25A27    | NA       | NA       | NA       | -0.068   | 0.950    | NA       | NA       | 0.056    | 1.000    |
| NM_002635       | SLC25A3     | NA       | NA       | NA       | -0.034   | 0.976    | NA       | NA       | -0.327   | 0.573    |
| NM_001151       | SLC25A4     | NA       | NA       | NA       | -0.201   | 0.687    | NA       | NA       | 0.082    | 1.000    |
| NM_001152       | SLC25A5     | NA       | NA       | NA       | -0.080   | 0.912    | NA       | NA       | 0.118    | 0.970    |
| Gene Symbol | Gene Name |
|-------------|-----------|
| NM_003172   | SURF1     |
| NM_003355   | UCP2      |
| NM_013387   | UQCR10    |
| NM_006830   | UQCR11    |
| NM_006294   | UQCRB     |
| NM_003365   | UQCRC1    |
| NM_003366   | UQCRC2    |
| NM_006003   | UQCRFS1   |
| NM_001297566| UQCRH     |
| NM_014402   | UQCRQ     |
| NM_001001937| ATP5A1    |
| NM_001686   | ATP5B     |
| NM_005174   | ATP5C1    |
| NM_001687   | ATP5D     |
| NM_001688   | ATP5F1    |
| NM_005175   | ATP5G1    |
| NM_001002031| ATP5G2    |
| NM_001689   | ATP5G3    |
| NM_006356   | ATP5H     |
| NM_007100   | ATP5I     |
| NM_004889   | ATP5J2    |
| NM_006476   | ATP5L     |
| NM_001697   | ATP5O     |
| NM_001003805| ATP5S     |
| NM_178190   | ATP5T     |
| NM_001162862| COX11     |
| NM_078470   | COX15     |
| NM_005694   | COX17     |

**G25+Olea**
| Gene Symbol | Description | Value 1 | Value 2 | Value 3 | Value 4 | Value 5 |
|-------------|-------------|---------|---------|---------|---------|---------|
| NM_001861   | COX4I1      | NA      | NA      | NA      | -0.039  | 0.967   |
| NM_004255   | COX5A       | NA      | NA      | NA      | -0.167  | 0.750   |
| NM_001862   | COX5B       | NA      | NA      | NA      | -0.356  | 0.323   |
| NM_004373   | COX6A1      | NA      | NA      | NA      | -0.370  | 0.303   |
| NM_001863   | COX6B1      | NA      | NA      | NA      | -0.208  | 0.654   |
| NM_004374   | COX6C       | NA      | NA      | NA      | -0.548  | 0.069   |
| NM_001864   | COX6B1      | NA      | NA      | NA      | -0.271  | 0.567   |
| NM_001865   | COX6B1      | NA      | NA      | NA      | -0.280  | 0.477   |
| NM_004718   | COX7A2L     | NA      | NA      | NA      | -0.089  | 0.885   |
| NM_001866   | COX7B       | NA      | NA      | NA      | -0.444  | 0.181   |
| NM_001867   | COX7C       | NA      | NA      | NA      | -0.393  | 0.257   |
| NM_004074   | COX8A       | NA      | NA      | NA      | -0.486  | 0.124   |
| NM_004541   | NDUFA1      | NA      | NA      | NA      | -0.359  | 0.323   |
| NM_004544   | NDUFA10     | NA      | NA      | NA      | -0.108  | 0.858   |
| NM_002488   | NDUFA2      | NA      | NA      | NA      | -0.096  | 0.883   |
| NM_004542   | NDUFA3      | NA      | NA      | NA      | -0.209  | 0.662   |
| NM_002489   | NDUFA4      | NA      | NA      | NA      | -0.188  | 0.698   |
| NM_001258338| NDUFA12     | NA      | NA      | NA      | -0.057  | 0.945   |
| NM_002488   | NDUFA2      | NA      | NA      | NA      | -0.096  | 0.883   |
| NM_004542   | NDUFA3      | NA      | NA      | NA      | -0.209  | 0.662   |
| NM_002489   | NDUFA4      | NA      | NA      | NA      | -0.188  | 0.698   |
| NM_001291304| NDUFA5      | NA      | NA      | NA      | -0.123  | 0.822   |
| NM_002490   | NDUFA6      | NA      | NA      | NA      | 0.057   | 0.942   |
| NM_005001   | NDUFA7      | NA      | NA      | NA      | -0.663  | 0.024   |
| NM_014222   | NDUFA8      | NA      | NA      | NA      | -0.169  | 0.745   |
| NM_005002   | NDUFA9      | NA      | NA      | NA      | -0.200  | 0.668   |
| NM_005003   | NDUFA10     | NA      | NA      | NA      | -0.170  | 0.735   |
| NM_004545   | NDUFB1      | NA      | NA      | NA      | -0.442  | 0.206   |
| NM_004548   | NDUFB10     | NA      | NA      | NA      | -0.099  | 0.872   |
| NM_004546   | NDUFB2      | NA      | NA      | NA      | -0.302  | 0.428   |
| NM_002491   | NDUFB3      | NA      | NA      | NA      | -0.469  | 0.163   |
| Gene     | Gene     | Correlation coefficient |
|----------|----------|-------------------------|
| NM_004547 | NDUFB4   | -0.330  0.380  0.543  0.034 -0.270  0.625 |
| NM_001199958 | NDUFB5 | NA NA NA NA -0.162 0.753 0.048 0.900 0.097 0.935 |
| NM_002493 | NDUFB6   | NA NA NA NA -0.214 0.639 0.370 0.195 -0.203 0.778 |
| NM_004146 | NDUFB7   | NA NA NA NA -0.245 0.568 0.978 0.000 -0.116 0.913 |
| NM_005004 | NDUFB8   | NA NA NA NA -0.410 0.218 -0.311 0.257 -0.119 0.903 |
| NM_005005 | NDUFB9   | NA NA NA NA -0.262 0.526 1.288 0.000 0.095 0.937 |
| NM_001184990 | NDUFC1 | NA NA NA NA -0.199 0.673 0.624 0.026 -0.228 0.722 |
| NM_001204055 | NDUFC2 | NA NA NA NA -0.089 0.892 -0.372 0.207 -0.073 0.959 |
| NM_001199981 | NDUFS1 | NA NA NA NA -0.016 1.000 0.073 0.831 0.001 1.000 |
| NM_004550 | NDUFS2   | NA NA NA NA 0.133 0.806 0.107 0.743 -0.116 0.911 |
| NM_004551 | NDUFS3   | NA NA NA NA -0.312 0.434 0.827 0.001 -0.269 0.641 |
| NM_002495 | NDUFS4   | NA NA NA NA -0.236 0.606 0.216 0.505 0.062 0.968 |
| NM_004552 | NDUFS5   | NA NA NA NA -0.142 0.791 0.342 0.234 -0.074 0.959 |
| NM_004553 | NDUFS6   | NA NA NA NA -0.332 0.401 1.107 0.000 -0.194 0.801 |
| NM_024407 | NDUFS7   | NA NA NA NA -0.338 0.381 1.321 0.000 -0.267 0.662 |
| NM_002496 | NDUFS8   | NA NA NA NA -0.229 0.611 0.799 0.002 -0.351 0.460 |
| NM_001166102 | NDUVF1 | NA NA NA NA 0.042 0.966 0.805 0.001 -0.193 0.801 |
| NM_021074 | NDUVF2   | NA NA NA NA 0.105 0.859 -0.007 1.000 0.165 0.840 |
| NM_021075 | NDUVF3   | NA NA NA NA -0.076 0.922 1.139 0.000 -0.117 0.921 |
| NM_004589 | SCO1     | NA NA NA NA 0.093 0.901 0.756 0.004 0.204 0.797 |
| NM_001294332 | SDHA | NA NA NA NA 0.528 0.084 0.265 0.352 -0.149 0.872 |
| NM_003000 | SDHB     | NA NA NA NA -0.105 0.861 0.428 0.113 -0.067 0.962 |
| NM_003001 | SDHC     | NA NA NA NA -0.114 0.847 0.247 0.421 -0.036 0.994 |
| NM_001276503 | SDHD | NA NA NA NA -0.033 0.980 0.340 0.238 0.181 0.815 |
| NM_001282198 | SLC25A14 | NA NA NA NA -0.641 0.072 1.188 0.000 0.054 0.983 |
| NM_001204052 | SLC25A27 | NA NA NA NA -0.122 0.883 -0.075 0.854 0.188 0.894 |
| NM_002635 | SLC25A3  | NA NA NA NA -0.076 0.912 -0.026 0.949 -0.259 0.644 |
| NM_001151 | SLC25A4  | NA NA NA NA -0.203 0.656 0.282 0.305 -0.106 0.925 |
| Gene      | Expression | Fold Change | p-value | Gene      | Expression | Fold Change | p-value | Gene      | Expression | Fold Change | p-value | Gene      | Expression | Fold Change | p-value |
|-----------|------------|-------------|---------|-----------|------------|-------------|---------|-----------|------------|-------------|---------|-----------|------------|-------------|---------|
| NM_001152 | SLC25A5    | NA          | NA      | NM_001152 | SLC25A5    | NA          | NA      | NM_001152 | SLC25A5    | NA          | NA      | NM_001152 | SLC25A5    | NA          | NA      |
| NM_003172 | SURF1      | NA          | NA      | NM_003172 | SURF1      | NA          | NA      | NM_003172 | SURF1      | NA          | NA      | NM_003172 | SURF1      | NA          | NA      |
| NM_003355 | UCP2       | NA          | NA      | NM_003355 | UCP2       | NA          | NA      | NM_003355 | UCP2       | NA          | NA      | NM_003355 | UCP2       | NA          | NA      |
| NM_013387 | UQCR10     | NA          | NA      | NM_013387 | UQCR10     | NA          | NA      | NM_013387 | UQCR10     | NA          | NA      | NM_013387 | UQCR10     | NA          | NA      |
| NM_006830 | UQCR11     | NA          | NA      | NM_006830 | UQCR11     | NA          | NA      | NM_006830 | UQCR11     | NA          | NA      | NM_006830 | UQCR11     | NA          | NA      |
| NM_006294 | UQCRB      | NA          | NA      | NM_006294 | UQCRB      | NA          | NA      | NM_006294 | UQCRB      | NA          | NA      | NM_006294 | UQCRB      | NA          | NA      |
| NM_003365 | UQCRC1     | NA          | NA      | NM_003365 | UQCRC1     | NA          | NA      | NM_003365 | UQCRC1     | NA          | NA      | NM_003365 | UQCRC1     | NA          | NA      |
| NM_003366 | UQCRC2     | NA          | NA      | NM_003366 | UQCRC2     | NA          | NA      | NM_003366 | UQCRC2     | NA          | NA      | NM_003366 | UQCRC2     | NA          | NA      |
| NM_006003 | UQCRFS1    | NA          | NA      | NM_006003 | UQCRFS1    | NA          | NA      | NM_006003 | UQCRFS1    | NA          | NA      | NM_006003 | UQCRFS1    | NA          | NA      |
| NM_001297566 | UQCRH | NA          | NA      | NM_001297566 | UQCRH | NA          | NA      | NM_001297566 | UQCRH | NA          | NA      | NM_001297566 | UQCRH | NA          | NA      | NM_001297566 | UQCRH | NA          | NA      |
| NM_014402 | UQCRQ      | NA          | NA      | NM_014402 | UQCRQ      | NA          | NA      | NM_014402 | UQCRQ      | NA          | NA      | NM_014402 | UQCRQ      | NA          | NA      |
| NM_001001937 | ATP5A1     | NA          | NA      | NM_001001937 | ATP5A1     | NA          | NA      | NM_001001937 | ATP5A1     | NA          | NA      | NM_001001937 | ATP5A1     | NA          | NA      |
| NM_001686 | ATP5B      | NA          | NA      | NM_001686 | ATP5B      | NA          | NA      | NM_001686 | ATP5B      | NA          | NA      | NM_001686 | ATP5B      | NA          | NA      |
| NM_005174 | ATP5C1     | NA          | NA      | NM_005174 | ATP5C1     | NA          | NA      | NM_005174 | ATP5C1     | NA          | NA      | NM_005174 | ATP5C1     | NA          | NA      |
| NM_001687 | ATP5D      | NA          | NA      | NM_001687 | ATP5D      | NA          | NA      | NM_001687 | ATP5D      | NA          | NA      | NM_001687 | ATP5D      | NA          | NA      |
| NM_001688 | ATP5F1     | NA          | NA      | NM_001688 | ATP5F1     | NA          | NA      | NM_001688 | ATP5F1     | NA          | NA      | NM_001688 | ATP5F1     | NA          | NA      |
| NM_005175 | ATP5G1     | NA          | NA      | NM_005175 | ATP5G1     | NA          | NA      | NM_005175 | ATP5G1     | NA          | NA      | NM_005175 | ATP5G1     | NA          | NA      |
| NM_001002031 | ATP5G2 | NA          | NA      | NM_001002031 | ATP5G2 | NA          | NA      | NM_001002031 | ATP5G2 | NA          | NA      | NM_001002031 | ATP5G2 | NA          | NA      |
| NM_001689 | ATP5G3     | NA          | NA      | NM_001689 | ATP5G3     | NA          | NA      | NM_001689 | ATP5G3     | NA          | NA      | NM_001689 | ATP5G3     | NA          | NA      |
| NM_006356 | ATP5H      | NA          | NA      | NM_006356 | ATP5H      | NA          | NA      | NM_006356 | ATP5H      | NA          | NA      | NM_006356 | ATP5H      | NA          | NA      |
| NM_007100 | ATP5I      | NA          | NA      | NM_007100 | ATP5I      | NA          | NA      | NM_007100 | ATP5I      | NA          | NA      | NM_007100 | ATP5I      | NA          | NA      |
| NM_004889 | ATP5J2     | NA          | NA      | NM_004889 | ATP5J2     | NA          | NA      | NM_004889 | ATP5J2     | NA          | NA      | NM_004889 | ATP5J2     | NA          | NA      |
| NM_006476 | ATP5L      | NA          | NA      | NM_006476 | ATP5L      | NA          | NA      | NM_006476 | ATP5L      | NA          | NA      | NM_006476 | ATP5L      | NA          | NA      |
| NM_001697 | ATP5O      | NA          | NA      | NM_001697 | ATP5O      | NA          | NA      | NM_001697 | ATP5O      | NA          | NA      | NM_001697 | ATP5O      | NA          | NA      |
| NM_001003805 | ATP5S    | NA          | NA      | NM_001003805 | ATP5S    | NA          | NA      | NM_001003805 | ATP5S    | NA          | NA      | NM_001003805 | ATP5S    | NA          | NA      |
| NM_178190 | ATPIF1     | NA          | NA      | NM_178190 | ATPIF1     | NA          | NA      | NM_178190 | ATPIF1     | NA          | NA      | NM_178190 | ATPIF1     | NA          | NA      |
| NM_001162862 | COX11  | NA          | NA      | NM_001162862 | COX11  | NA          | NA      | NM_001162862 | COX11  | NA          | NA      | NM_001162862 | COX11  | NA          | NA      |
| NM_078470 | COX15      | NA          | NA      | NM_078470 | COX15      | NA          | NA      | NM_078470 | COX15      | NA          | NA      | NM_078470 | COX15      | NA          | NA      |
| Accession  | Gene   | Exon | MAF  | MAE  | MAF_m | MAE_m | MAF_r | MAE_r |
|------------|--------|------|------|------|-------|-------|-------|-------|
| NM_005694  | COX17  | NA   | NA   | NA   | NA    | -0.177| 0.682 | NA    | -0.081| 0.952|
| NM_001861  | COX4I1 | NA   | NA   | NA   | NA    | 0.085 | 0.880 | NA    | 0.069 | 0.967|
| NM_004255  | COX5A  | NA   | NA   | NA   | NA    | -0.098| 0.861 | NA    | -0.085| 0.953|
| NM_001862  | COX5B  | NA   | NA   | NA   | NA    | -0.191| 0.647 | NA    | -0.142| 0.865|
| NM_004373  | COX6A1 | NA   | NA   | NA   | NA    | -0.216| 0.595 | NA    | -0.236| 0.701|
| NM_001863  | COX6B1 | NA   | NA   | NA   | NA    | -0.061| 0.925 | NA    | -0.038| 0.994|
| NM_004374  | COX6C  | NA   | NA   | NA   | NA    | -0.293| 0.401 | NA    | -0.169| 0.820|
| NM_001864  | COX7A1 | NA   | NA   | NA   | NA    | -0.022| 0.988 | NA    | 0.292 | 0.622|
| NM_001865  | COX7A2 | NA   | NA   | NA   | NA    | -0.116| 0.818 | NA    | 0.092 | 0.935|
| NM_004718  | COX7A2L| NA   | NA   | NA   | NA    | 0.025 | 0.977 | NA    | 0.104 | 0.917|
| NM_001866  | COX7B  | NA   | NA   | NA   | NA    | -0.157| 0.730 | NA    | -0.219| 0.730|
| NM_001867  | COX7C  | NA   | NA   | NA   | NA    | -0.051| 0.940 | NA    | -0.149| 0.855|
| NM_004074  | COX8A  | NA   | NA   | NA   | NA    | -0.539| 0.057 | NA    | -0.049| 0.982|
| NM_004541  | NDUFA1 | NA   | NA   | NA   | NA    | -0.310| 0.373 | NA    | -0.158| 0.841|
| NM_004544  | NDUFA10| NA   | NA   | NA   | NA    | -0.164| 0.718 | NA    | -0.184| 0.804|
| NM_001258338| NDUFA12| NA   | NA   | NA   | NA    | 0.049 | 0.944 | NA    | 0.136 | 0.875|
| NM_002488  | NDUFA2 | NA   | NA   | NA   | NA    | -0.138| 0.781 | NA    | 0.144 | 0.870|
| NM_004542  | NDUFA3 | NA   | NA   | NA   | NA    | -0.278| 0.458 | NA    | -0.025| 1.000|
| NM_002489  | NDUFA4 | NA   | NA   | NA   | NA    | 0.052 | 0.940 | NA    | -0.072| 0.967|
| NM_001291304| NDUFA5| NA   | NA   | NA   | NA    | -0.069| 0.910 | NA    | 0.141 | 0.864|
| NM_002490  | NDUFA6 | NA   | NA   | NA   | NA    | 0.228 | 0.556 | NA    | 0.190 | 0.782|
| NM_005001  | NDUFA7 | NA   | NA   | NA   | NA    | -0.576| 0.046 | NA    | -0.055| 0.981|
| NM_014222  | NDUFA8 | NA   | NA   | NA   | NA    | 0.002 | 1.000 | NA    | -0.096| 0.936|
| NM_005002  | NDUFA9 | NA   | NA   | NA   | NA    | -0.059| 0.926 | NA    | 0.086 | 0.946|
| NM_005003  | NDUFA10| NA   | NA   | NA   | NA    | -0.208| 0.612 | NA    | -0.078| 0.957|
| NM_004545  | NDUFB1 | NA   | NA   | NA   | NA    | -0.515| 0.093 | NA    | -0.299| 0.560|
| NM_004548  | NDUFB10| NA   | NA   | NA   | NA    | -0.205| 0.619 | NA    | 0.086 | 0.949|
| NM_004546  | NDUFB2 | NA   | NA   | NA   | NA    | -0.391| 0.212 | NA    | 0.093 | 0.934|
| Gene       | NM_002491 | NDUBFB3 | NA | NA | NA | NA | -0.369 | 0.273 | NA | NA | -0.211 | 0.752 |
|------------|-----------|---------|----|----|----|----|--------|------|----|----|--------|------|
| NM_004547  | NDUBFB4   | NA      | NA | NA | NA | NA | -0.250 | 0.505 | NA | NA | -0.159 | 0.842 |
| NM_001199985| NDUBFB5   | NA      | NA | NA | NA | NA | -0.255 | 0.497 | NA | NA | 0.126  | 0.889 |
| NM_002493  | NDUBFB6   | NA      | NA | NA | NA | NA | -0.215 | 0.596 | NA | NA | -0.098 | 0.927 |
| NM_004146  | NDUBFB7   | NA      | NA | NA | NA | NA | -0.358 | 0.275 | NA | NA | 0.116  | 0.905 |
| NM_005004  | NDUBFB8   | NA      | NA | NA | NA | NA | -0.289 | 0.405 | NA | NA | 0.098  | 0.925 |
| NM_005005  | NDUBFB9   | NA      | NA | NA | NA | NA | -0.221 | 0.575 | NA | NA | 0.029  | 1.000 |
| NM_001184990| NDUFIC1   | NA      | NA | NA | NA | NA | -0.061 | 0.924 | NA | NA | -0.204 | 0.761 |
| NM_001204055| NDUFIC2   | NA      | NA | NA | NA | NA | -0.153 | 0.741 | NA | NA | 0.136  | 0.875 |
| NM_001199981| NDUFIS1   | NA      | NA | NA | NA | NA | -0.083 | 0.888 | NA | NA | 0.047  | 0.985 |
| NM_004550  | NDUFIS2   | NA      | NA | NA | NA | NA | 0.030  | 0.972 | NA | NA | -0.084 | 0.950 |
| NM_004551  | NDUFIS3   | NA      | NA | NA | NA | NA | -0.266 | 0.485 | NA | NA | -0.041 | 0.990 |
| NM_002495  | NDUFIS4   | NA      | NA | NA | NA | NA | 0.113  | 0.838 | NA | NA | 0.053  | 0.983 |
| NM_004552  | NDUFIS5   | NA      | NA | NA | NA | NA | -0.029 | 0.974 | NA | NA | -0.034 | 0.997 |
| NM_004553  | NDUFIS6   | NA      | NA | NA | NA | NA | -0.131 | 0.798 | NA | NA | 0.176  | 0.819 |
| NM_024407  | NDUFIS7   | NA      | NA | NA | NA | NA | -0.499 | 0.102 | NA | NA | 0.068  | 0.972 |
| NM_002496  | NDUFIS8   | NA      | NA | NA | NA | NA | -0.452 | 0.149 | NA | NA | -0.064 | 0.974 |
| NM_001166102| NDUFV1    | NA      | NA | NA | NA | NA | -0.147 | 0.754 | NA | NA | -0.018 | 1.000 |
| NM_021074  | NDUFV2    | NA      | NA | NA | NA | NA | 0.335  | 0.316 | NA | NA | 0.361  | 0.391 |
| NM_021075  | NDUFV3    | NA      | NA | NA | NA | NA | -0.021 | 0.985 | NA | NA | 0.119  | 0.908 |
| NM_004589  | SCO1      | NA      | NA | NA | NA | NA | -0.120 | 0.835 | NA | NA | 0.017  | 1.000 |
| NM_001294332| SDHA      | NA      | NA | NA | NA | NA | 0.241  | 0.525 | NA | NA | -0.084 | 0.952 |
| NM_003000  | SDHB      | NA      | NA | NA | NA | NA | -0.084 | 0.886 | NA | NA | 0.032  | 1.000 |
| NM_003001  | SDHC      | NA      | NA | NA | NA | NA | -0.365 | 0.277 | NA | NA | -0.257 | 0.660 |
| NM_001276503| SDHD      | NA      | NA | NA | NA | NA | -0.001 | 1.000 | NA | NA | 0.186  | 0.795 |
| NM_001282198| SLC25A14  | NA      | NA | NA | NA | NA | -0.427 | 0.251 | NA | NA | 0.260  | 0.699 |
| NM_001204052| SLC25A27  | NA      | NA | NA | NA | NA | -0.106 | 0.880 | NA | NA | 0.250  | 0.814 |
| NM_002635  | SLC25A3   | NA      | NA | NA | NA | NA | -0.019 | 0.985 | NA | NA | -0.215 | 0.736 |
| Accession (NCBI Ref. Sequence) | Gene symbol | Log₂ FC | Adjusted p | Log₂ FC | Adjusted p | Log₂ FC | Adjusted p | Log₂ FC | Adjusted p | Log₂ FC | Adjusted p |
|------------------------------|-------------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|
| NM_001151 SLC25A4            | NA          | NA      | NA        | NA      | -0.135    | 0.774   | NA        | NA      | -0.023    | 1.000    |           |
| NM_001152 SLC25A5            | NA          | NA      | NA        | NA      | -0.013    | 0.996   | NA        | NA      | 0.210     | 0.742    |           |
| NM_003172 SURF1              | NA          | NA      | NA        | NA      | 0.093     | 0.869   | NA        | NA      | 0.282     | 0.604    |           |
| NM_003355 UCP2               | NA          | NA      | NA        | NA      | -0.751    | 0.017   | NA        | NA      | 0.594     | 0.068    |           |
| NM_013387 UQCR10             | NA          | NA      | NA        | NA      | 0.073     | 0.901   | NA        | NA      | 0.089     | 0.940    |           |
| NM_006830 UQCR11             | NA          | NA      | NA        | NA      | -0.263    | 0.468   | NA        | NA      | 0.044     | 0.986    |           |
| NM_006294 UQCRB              | NA          | NA      | NA        | NA      | -0.164    | 0.712   | NA        | NA      | -0.073    | 0.963    |           |
| NM_003365 UQCRC1             | NA          | NA      | NA        | NA      | 0.055     | 0.930   | NA        | NA      | -0.042    | 0.988    |           |
| NM_003366 UQCRC2             | NA          | NA      | NA        | NA      | -0.063    | 0.922   | NA        | NA      | 0.033     | 0.999    |           |
| NM_006003 UQCRFS1            | NA          | NA      | NA        | NA      | 0.029     | 0.976   | NA        | NA      | 0.131     | 0.887    |           |
| NM_001297566 UQCRH           | NA          | NA      | NA        | NA      | 0.044     | 0.958   | NA        | NA      | 0.126     | 0.899    |           |
| NM_014402 UQCRQ              | NA          | NA      | NA        | NA      | -0.197    | 0.628   | NA        | NA      | 0.121     | 0.893    |           |

**Supplementary Table S4.** Quantitative data related to the transcriptomic profiles of the outer and inner mitochondrial membrane translocases TOM/TIM machinery in human islets upon metabolic stress. NA: Not applicable (condition not tested); ND: not detected.
| NM_001290117 TIMM23B | ND | ND | ND | ND | NA | NA | -0.394 | 0.577 | NA | NA |
|-----------------------|----|----|----|----|----|----|---------|------|----|----|
| NM_006351 TIMM44      | 0.911 | 0.045 | 0.083 | 0.933 | NA | NA | -0.073 | 0.911 | NA | NA |
| NM_001001563 TIMM50   | 0.602 | 0.225 | 0.369 | 0.507 | NA | NA | -0.142 | 0.791 | NA | NA |
| NM_004085 TIMM8A      | -0.075 | 1.000 | -0.073 | 1.000 | NA | NA | -0.865 | 0.080 | NA | NA |
| NM_012459 TIMM8B      | -0.188 | 0.826 | 0.127 | 0.886 | NA | NA | -0.168 | 0.772 | NA | NA |
| NM_001304485 TIMM9    | -0.601 | 0.204 | 0.055 | 0.969 | NA | NA | -0.359 | 0.458 | NA | NA |
| NM_016589 TIMMDC1     | -0.188 | 0.689 | 0.070 | 0.932 | NA | NA | -0.047 | 0.952 | NA | NA |
| NM_014765 TOMM20      | -0.188 | 0.629 | 0.076 | 0.913 | NA | NA | -0.380 | 0.264 | NA | NA |
| NM_020243 TOMM22      | -0.020 | 1.000 | 0.158 | 0.793 | NA | NA | 0.113 | 0.843 | NA | NA |
| NM_006809 TOMM34      | -0.048 | 0.949 | 0.044 | 0.969 | NA | NA | 0.002 | 1.000 | NA | NA |
| NM_006114 TOMM40      | 1.395 | 0.036 | 0.800 | 0.113 | NA | NA | -0.010 | 1.000 | NA | NA |
| NM_001286373 TOMM40L  | 0.572 | 0.375 | 0.254 | 0.767 | NA | NA | 0.174 | 0.791 | NA | NA |
| NM_001134485 TOMM5    | -0.277 | 0.513 | 0.421 | 0.354 | NA | NA | 0.217 | 0.636 | NA | NA |
| NM_001134493 TOMM6    | -0.365 | 0.350 | -0.057 | 0.949 | NA | NA | -0.068 | 0.918 | NA | NA |
| NM_019059 TOMM7       | -0.146 | 0.797 | 0.153 | 0.807 | NA | NA | 0.141 | 0.783 | NA | NA |
| NM_014820 TOMM70A     | -0.177 | 0.657 | -0.068 | 0.930 | NA | NA | -0.324 | 0.378 | NA | NA |
| NM_012456 TIMM10      | 0.353 | 0.618 | -0.207 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_012192 TIMM10B     | 0.378 | 0.350 | -0.151 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_012458 TIMM13      | 1.052 | 0.034 | 0.180 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_006335 TIMM17A     | 0.004 | 1.000 | -0.090 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_005834 TIMM17B     | 1.983 | 0.000 | 0.399 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_014177 TIMM21      | -0.332 | 0.515 | -0.106 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_013337 TIMM22      | 0.572 | 0.245 | 0.060 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_006327 TIMM23      | -0.044 | 0.978 | 0.172 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_001290117 TIMM23B  | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA |
| NM_006351 TIMM44      | 0.245 | 0.744 | -0.476 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_001001563 TIMM50   | 0.155 | 0.896 | 0.223 | 1.000 | NA | NA | NA | NA | NA | NA |
| NM_004085 TIMM8A      | -0.368 | 0.834 | -0.259 | 1.000 | NA | NA | NA | NA | NA | NA |
|      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|
| TM    | Gene  |      |      |      |      |      |      |      |      |
|      |       |      |      |      |      |      |      |      |      |
| NM_012459 | TIMM8B | 0.129 | 0.945 | 0.066 | 1.000 | NA | NA | NA | NA |
| NM_001304485 | TIMM9 | 0.098 | 0.929 | -0.031 | 1.000 | NA | NA | NA | NA |
| NM_016589 | TIMMDCl | 0.274 | 0.519 | -0.152 | 1.000 | NA | NA | NA | NA |
| NM_014765 | TOMM20 | 0.066 | 0.921 | -0.012 | 1.000 | NA | NA | NA | NA |
| NM_020243 | TOMM22 | -0.006 | 1.000 | -0.061 | 1.000 | NA | NA | NA | NA |
| NM_006809 | TOMM34 | -0.045 | 0.974 | -0.225 | 1.000 | NA | NA | NA | NA |
| NM_006114 | TOMM40 | 1.207 | 0.091 | 0.755 | 0.897 | NA | NA | NA | NA |
| NM_001286373 | TOMM40L | 0.576 | 0.367 | -0.218 | 1.000 | NA | NA | NA | NA |
| NM_001134485 | TOMM5 | -0.252 | 0.599 | 0.276 | 1.000 | NA | NA | NA | NA |
| NM_001134493 | TOMM6 | -0.062 | 0.954 | -0.235 | 1.000 | NA | NA | NA | NA |
| NM_019059 | TOMM7 | 0.426 | 0.309 | -0.100 | 1.000 | NA | NA | NA | NA |
| NM_014820 | TOMM70A | -0.177 | 0.691 | 0.068 | 1.000 | NA | NA | NA | NA |
|      |      |      |      |      |      |      |      |      |      |
| NM_012456 | TIMM10 | 0.062 | 0.989 | 0.734 | 0.128 | -0.276 | 0.608 | 1.104 | 0.000 | NA | NA |
| NM_012192 | TIMM10B | 0.192 | 0.644 | 0.129 | 0.819 | -0.233 | 0.619 | 0.783 | 0.002 | NA | NA |
| NM_012458 | TIMM13 | 1.202 | 0.007 | 0.712 | 0.069 | -0.356 | 0.359 | 0.317 | 0.282 | NA | NA |
| NM_006335 | TIMM17A | -0.147 | 0.743 | 0.691 | 0.052 | -0.133 | 0.827 | 0.424 | 0.127 | NA | NA |
| NM_005834 | TIMM17B | 2.315 | 0.000 | 0.594 | 0.214 | -0.185 | 0.730 | -0.210 | 0.529 | NA | NA |
| NM_014177 | TIMM21 | -0.931 | 0.020 | 0.414 | 0.411 | -0.291 | 0.520 | 0.965 | 0.000 | NA | NA |
| NM_013337 | TIMM22 | 0.605 | 0.147 | 0.623 | 0.142 | 0.049 | 0.969 | 0.793 | 0.002 | NA | NA |
| NM_006327 | TIMM23 | -0.269 | 0.516 | 0.763 | 0.046 | -0.077 | 0.931 | 1.135 | 0.000 | NA | NA |
| NM_001290117 | TIMM23B | ND | ND | ND | ND | -1.297 | 0.065 | 0.202 | 0.744 | NA | NA |
| NM_006351 | TIMM44 | 0.537 | 0.283 | 0.261 | 0.625 | -0.099 | 0.910 | 0.403 | 0.155 | NA | NA |
| NM_001001563 | TIMM50 | 0.205 | 0.759 | 0.231 | 0.710 | -0.157 | 0.807 | 0.972 | 0.000 | NA | NA |
| NM_004085 | TIMM8A | 0.262 | 0.797 | 0.610 | 0.565 | -0.158 | 0.874 | 1.106 | 0.001 | NA | NA |
| NM_012459 | TIMM8B | 0.812 | 0.079 | 0.029 | 1.000 | -0.288 | 0.522 | 0.370 | 0.246 | NA | NA |
| NM_001304485 | TIMM9 | -0.317 | 0.494 | -0.288 | 0.629 | -0.702 | 0.067 | 0.290 | 0.431 | NA | NA |
| NM_016589 | TIMMDCl | 0.053 | 0.944 | 0.338 | 0.395 | 0.067 | 0.940 | 0.242 | 0.433 | NA | NA |
| NM_014765 | TOMM20 | -0.308 | 0.338 | -0.450 | 0.187 | -0.166 | 0.772 | -0.819 | 0.001 | NA | NA |
| RefSeq | Protein | Gene 1 | Gene 2 | Gene 3 | Gene 4 | Gene 5 | Gene 6 | Gene 7 | Gene 8 | Gene 9 | Gene 10 | Gene 11 | Gene 12 | Gene 13 | Gene 14 | Gene 15 |
|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| NM_020243 | TOMM22 | 0.140  | 0.764  | 0.259  | 0.557  | -0.322 | 0.448  | 0.124  | 0.736  | NA     | NA     | 0.175  | 0.817  | 0.791  | 0.416  | 0.018  | 1.253  |
| NM_006809 | TOMM34 | 0.297  | 0.409  | -0.200 | 0.650  | -0.338 | 0.390  | -0.388 | 0.173  | NA     | NA     | 0.578  | 0.249  | 0.118  | 0.436  | 0.047  | 0.962  |
| NM_006114 | TOMM40 | 2.089  | 0.000  | 0.660  | 0.212  | 0.105  | 0.884  | 0.558  | 0.050  | NA     | NA     | 0.332  | 0.441  | 0.021  | 0.991  | 0.332  | 0.441  |
| NM_001286373 | TOMM40L | 0.542  | 0.410  | -0.105 | 0.965  | 0.121  | 0.920  | -0.295 | 0.457  | NA     | NA     | 0.019  | 0.072  | 0.072  | 0.019  | 0.072  | 0.072  |
| NM_001134485 | TOMM5 | 0.255  | 0.519  | 0.507  | 0.187  | -0.118 | 0.852  | -0.003 | 1.000  | NA     | NA     | 0.019  | 0.072  | 0.072  | 0.019  | 0.072  | 0.072  |
| NM_001134493 | TOMM6 | -0.118 | 0.791  | 0.436  | 0.241  | -0.297 | 0.486  | -0.237 | 0.449  | NA     | NA     | 0.019  | 0.072  | 0.072  | 0.019  | 0.072  | 0.072  |
| NM_019059 | TOMM7 | 0.129  | 0.817  | 0.262  | 0.578  | -0.347 | 0.386  | -0.799 | 0.003  | NA     | NA     | 0.019  | 0.072  | 0.072  | 0.019  | 0.072  | 0.072  |
| NM_014820 | TOMM70A | -0.416 | 0.175  | 0.047  | 0.962  | 0.709  | 0.018  | 1.253  | 0.000  | NA     | NA     | 0.019  | 0.072  | 0.072  | 0.019  | 0.072  | 0.072  |
| NM_012456 | TIMM10 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.049  | 0.968  | -0.213 | 0.886  | NA     | NA     | NA     | NA     | NA     |
| NM_012192 | TIMM10B | NA     | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.021  | 0.993  | 0.022  | 1.000  | NA     | NA     | NA     | NA     | NA     |
| NM_012458 | TIMM13 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | -0.067 | 0.937  | -0.165 | 0.919  | NA     | NA     | NA     | NA     | NA     |
| NM_006335 | TIMM17A | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.106  | 0.875  | -0.078 | 1.000  | NA     | NA     | NA     | NA     | NA     |
| NM_005834 | TIMM17B | NA     | NA     | NA     | NA     | NA     | NA     | NA     | -0.022 | 0.991  | 0.021  | 1.000  | NA     | NA     | NA     | NA     | NA     |
| NM_014177 | TIMM21 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | -0.126 | 0.851  | -0.116 | 0.980  | NA     | NA     | NA     | NA     | NA     |
| NM_013337 | TIMM22 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.216  | 0.673  | 0.053  | 1.000  | NA     | NA     | NA     | NA     | NA     |
| NM_006327 | TIMM23 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.332  | 0.441  | -0.011 | 1.000  | NA     | NA     | NA     | NA     | NA     |
| NM_001290117 | TIMM23B | NA     | NA     | NA     | NA     | NA     | NA     | NA     | -0.068 | 0.990  | 0.830  | 0.315  | NA     | NA     | NA     | NA     | NA     |
| NM_006351 | TIMM44 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.072  | 0.943  | -0.157 | 0.950  | NA     | NA     | NA     | NA     | NA     |
| NM_001001563 | TIMM50 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.154  | 0.808  | -0.090 | 1.000  | NA     | NA     | NA     | NA     | NA     |
| NM_004085 | TIMM8A | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.113  | 0.930  | -0.072 | 1.000  | NA     | NA     | NA     | NA     | NA     |
| NM_012459 | TIMM8B | NA     | NA     | NA     | NA     | NA     | NA     | NA     | -0.217 | 0.684  | -0.079 | 1.000  | NA     | NA     | NA     | NA     | NA     |
| NM_001304485 | TIMM9 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | -0.634 | 0.119  | -0.420 | 0.555  | NA     | NA     | NA     | NA     | NA     |
| NM_016589 | TIMMDC1 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.109  | 0.869  | 0.058  | 1.000  | NA     | NA     | NA     | NA     | NA     |
| NM_014765 | TOMM20 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | -0.203 | 0.703  | -0.378 | 0.497  | NA     | NA     | NA     | NA     | NA     |
| NM_020243 | TOMM22 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | -0.037 | 0.978  | -0.183 | 0.899  | NA     | NA     | NA     | NA     | NA     |
| NM_006809 | TOMM34 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | -0.472 | 0.166  | -0.462 | 0.264  | NA     | NA     | NA     | NA     | NA     |
| NM_006114 | TOMM40 | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.336  | 0.416  | 0.483  | 0.283  | NA     | NA     | NA     | NA     | NA     |
| NM_001286373 | TOMM40L | NA     | NA     | NA     | NA     | NA     | NA     | NA     | 0.167  | 0.859  | 0.058  | 1.000  | NA     | NA     | NA     | NA     | NA     |
| Gene ID       | Description | C25 + Olea |
|--------------|-------------|------------|
| NM_001134485 | TOMM5      | 0.118, 0.851, -0.011, 1.000 |
| NM_001134493 | TOMM6      | NA, NA, NA, NA |
| NM_019059    | TOMM7      | NA, NA, NA, NA |
| NM_014820    | TOMM70A    | 0.675, 0.029, 1.027, 0.000 |
| NM_012456    | TIMM10     | NA, NA, NA, NA |
| NM_012192    | TIMM10B    | NA, NA, NA, NA |
| NM_006353    | TIMM17A    | NA, NA, NA, NA |
| NM_014820    | TIMM70A    | 0.675, 0.029, 1.027, 0.000 |
| NM_014177    | TIMM21     | NA, NA, NA, NA |
| NM_013337    | TIMM22     | NA, NA, NA, NA |
| NM_014820    | TIMM70A    | 0.675, 0.029, 1.027, 0.000 |
| NM_001290117 | TIMM23B    | NA, NA, NA, NA |
| NM_006351    | TIMM44     | NA, NA, NA, NA |
| NM_001001563 | TIMM50     | NA, NA, NA, NA |
| NM_004085    | TIMM8A     | NA, NA, NA, NA |
| NM_012459    | TIMM8B     | NA, NA, NA, NA |
| NM_001304485 | TIMM9      | NA, NA, NA, NA |
| NM_016589    | TIMMDC1    | NA, NA, NA, NA |
| NM_014765    | TOMM20     | NA, NA, NA, NA |
| NM_020243    | TOMM22     | NA, NA, NA, NA |
| NM_006809    | TOMM34     | NA, NA, NA, NA |
| NM_006114    | TOMM40     | NA, NA, NA, NA |
| NM_001286373 | TOMM40L    | NA, NA, NA, NA |
| NM_001134485 | TOMM5      | NA, NA, NA, NA |
| NM_001134493 | TOMM6      | NA, NA, NA, NA |
| NM_019059    | TOMM7      | NA, NA, NA, NA |
| NM_014820    | TOMM70A    | 0.601, 0.051, 1.126, 0.000 |

Note: C25 + Olea values are given in the following format: p-value, q-value, adjusted p-value, adjusted q-value.
| NM_012456 | TIMM10 | G25 + Palm | GA4 | NA | NA | NA | NA | -0.083 | 0.902 | NA | NA | 0.065 | 0.980 |
|-----------|--------|------------|-----|----|----|----|----|--------|------|----|----|------|------|
| NM_012192 | TIMM10B| G25 + Palm | GA4 | NA | NA | NA | NA | -0.073 | 0.903 | NA | NA | 0.102 | 0.924 |
| NM_012458 | TIMM13 | G25 + Palm | GA4 | NA | NA | NA | NA | -0.193 | 0.653 | NA | NA | -0.140 | 0.878 |
| NM_006335 | TIMM17A| G25 + Palm | GA4 | NA | NA | NA | NA | 0.426  | 0.169 | NA | NA | 0.263 | 0.637 |
| NM_005834 | TIMM17B| G25 + Palm | GA4 | NA | NA | NA | NA | -0.216 | 0.603 | NA | NA | 0.095 | 0.937 |
| NM_014177 | TIMM21 | G25 + Palm | GA4 | NA | NA | NA | NA | -0.023 | 0.983 | NA | NA | -0.061 | 0.980 |
| NM_013337 | TIMM22 | G25 + Palm | GA4 | NA | NA | NA | NA | -0.067 | 0.918 | NA | NA | 0.078 | 0.962 |
| NM_006327 | TIMM23 | G25 + Palm | GA4 | NA | NA | NA | NA | 0.246  | 0.547 | NA | NA | 0.020 | 1.000 |
| NM_001290117 | TIMM23B | G25 + Palm | GA4 | NA | NA | NA | NA | 0.197  | 0.863 | NA | NA | 0.616 | 0.529 |
| NM_006351 | TIMM44 | G25 + Palm | GA4 | NA | NA | NA | NA | 0.340  | 0.374 | NA | NA | -0.303 | 0.641 |
| NM_001001563 | TIMM50 | G25 + Palm | GA4 | NA | NA | NA | NA | 0.038  | 0.969 | NA | NA | 0.101 | 0.936 |
| NM_004085 | TIMM8A | G25 + Palm | GA4 | NA | NA | NA | NA | -0.436 | 0.397 | NA | NA | -0.101 | 0.982 |
| NM_012459 | TIMM8B | G25 + Palm | GA4 | NA | NA | NA | NA | 0.008  | 1.000 | NA | NA | -0.052 | 0.984 |
| NM_001304485 | TIMM9 | G25 + Palm | GA4 | NA | NA | NA | NA | -0.303 | 0.501 | NA | NA | -0.110 | 0.948 |
| NM_016589 | TIMMDC1 | G25 + Palm | GA4 | NA | NA | NA | NA | 0.062  | 0.923 | NA | NA | 0.078 | 0.956 |
| NM_014765 | TOMM20 | G25 + Palm | GA4 | NA | NA | NA | NA | 0.007  | 1.000 | NA | NA | -0.272 | 0.644 |
| NM_020243 | TOMM22 | G25 + Palm | GA4 | NA | NA | NA | NA | -0.062 | 0.926 | NA | NA | -0.060 | 0.979 |
| NM_006809 | TOMM34 | G25 + Palm | GA4 | NA | NA | NA | NA | -0.461 | 0.129 | NA | NA | -0.294 | 0.557 |
| NM_006114 | TOMM40 | G25 + Palm | GA4 | NA | NA | NA | NA | 0.218  | 0.605 | NA | NA | 0.397 | 0.385 |
| NM_001286373 | TOMM40L | G25 + Palm | GA4 | NA | NA | NA | NA | 0.076  | 0.946 | NA | NA | 0.067 | 0.988 |
| NM_001134485 | TOMM5 | G25 + Palm | GA4 | NA | NA | NA | NA | 0.242  | 0.521 | NA | NA | 0.000 | 1.000 |
| NM_001134493 | TOMM6 | G25 + Palm | GA4 | NA | NA | NA | NA | -0.081 | 0.892 | NA | NA | -0.090 | 0.943 |
| NM_019059 | TOMM7 | G25 + Palm | GA4 | NA | NA | NA | NA | -0.315 | 0.375 | NA | NA | -0.172 | 0.826 |
| NM_014820 | TOMM70A | G25 + Palm | GA4 | NA | NA | NA | NA | 0.715  | 0.010 | NA | NA | 1.114 | 0.000 |
Supplementary Table S5. Quantitative data related to the transcriptomic profiles of mitochondrial iron transport genes in human islets under metabolic stress.
NA: Not applicable (condition not tested); ND: not detected.

| Accession (NCBI Ref. Sequence) | Gene symbol | Donor #1 | Donor #2 | Donor #3 | Donor #4 | Donor #5 |
|--------------------------------|-------------|----------|----------|----------|----------|----------|
|                                |             | Log:FC   | Adjusted p | Log:FC   | Adjusted p | Log:FC   | Adjusted p | Log:FC   | Adjusted p |
| Okea                           |             |          |          |          |          |          |          |          |          |
| NM_012089                       | ABCB10      | -0.304   | 0.493    | -0.275   | 0.648    | NA       | NA        | 0.017    | 1.000     |
| NM_005689                       | ABCB6       | 0.312    | 0.565    | 0.321    | 0.587    | NA       | NA        | 0.037    | 0.971     |
| NM_007188                       | ABCB8       | 1.295    | 0.002    | 0.415    | 0.428    | NA       | NA        | 0.651    | 0.048     |
| NM_177478                       | FTMT        | ND       | ND       | ND       | ND       | NA       | NA        | ND       | ND        |
| NM_001161706                    | FXN         | -0.901   | 0.308    | -0.131   | 0.990    | NA       | NA        | 0.873    | 0.198     |
| NM_031212                       | SLC25A28    | 0.286    | 0.637    | 0.049    | 0.976    | NA       | NA        | -0.074   | 0.921     |
| NM_016612                       | SLC25A37    | 0.618    | 0.220    | 0.318    | 0.630    | NA       | NA        | 0.581    | 0.101     |
| NM_017875                       | SLC25A38    | -0.693   | 0.089    | 0.300    | 0.568    | NA       | NA        | -0.286   | 0.473     |
| NM_016016                       | SLC25A39    | 1.051    | 0.001    | 0.386    | 0.359    | NA       | NA        | 0.131    | 0.793     |
| NM_016462                       | TMEM14C     | -0.323   | 0.396    | 0.358    | 0.430    | NA       | NA        | 0.013    | 1.000     |
| NM_007114                       | TSPO        | 2.680    | 0.000    | 0.610    | 0.163    | NA       | NA        | 0.399    | 0.306     |
| Palm                           |             |          |          |          |          |          |          |          |          |
| NM_012089                       | ABCB10      | -0.018   | 1.000    | -0.186   | 1.000    | NA       | NA        | NA       | NA        |
| NM_005689                       | ABCB6       | 0.387    | 0.473    | 0.609    | 1.000    | NA       | NA        | NA       | NA        |
| NM_007188                       | ABCB8       | 1.338    | 0.002    | 0.502    | 1.000    | NA       | NA        | NA       | NA        |
| NM_177478                       | FTMT        | ND       | ND       | ND       | ND       | NA       | NA        | NA       | NA        |
| NM_001161706                    | FXN         | -2.152   | 0.022    | -0.943   | 1.000    | NA       | NA        | NA       | NA        |
| NM_031212                       | SLC25A28    | 0.653    | 0.173    | -0.101   | 1.000    | NA       | NA        | NA       | NA        |
| NM_016612                       | SLC25A37    | -0.113   | 0.953    | 0.017    | 1.000    | NA       | NA        | NA       | NA        |
| NM_017875                       | SLC25A38    | -0.104   | 0.901    | 0.105    | 1.000    | NA       | NA        | NA       | NA        |
| NM_016016                       | SLC25A39    | 1.056    | 0.001    | 0.142    | 1.000    | NA       | NA        | NA       | NA        |
| NM_016462                       | TMEM14C     | 0.061    | 0.938    | 0.300    | 1.000    | NA       | NA        | NA       | NA        |
| NM_000714                       | TSPO        | 2.058    | 0.000    | 0.104    | 1.000    | NA       | NA        | NA       | NA        |
| Gene     | G25+Olea+NPM | G25+Ole+Paln | G25+Olea |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----------|--------------|--------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| NM_012089| ABCB10       | -0.311       |          | 0.440|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_005689| ABCB6        | 0.007        | 1.000    | 0.279| 0.623| 0.007| 0.319|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_007188| ABCB8        | 1.218        | 0.004    | 0.569| 0.202| 0.202| 0.004|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_177478| FTMT         | ND           | ND       | ND   | ND   | ND   | ND   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_001161706| FXN    | -1.268       | 0.162    | -0.273| 0.884| 0.007|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_01212 | SLC25A28     | 0.430        | 0.387    | 0.426| 0.348| 0.348| 0.770|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_016612| SLC25A37     | 0.498        | 0.297    | -0.286| 0.692| 0.355| 0.352|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_017875| SLC25A38     | -0.428       | 0.287    | 0.221| 0.673| 0.494| 0.254|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_016016| SLC25A39     | 1.312        | 0.000    | 0.486| 0.152| 0.263| 0.538|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_016462| TMEM14C      | -0.215       | 0.558    | 0.328| 0.416| 0.401| 0.278|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_000714| TSPO         | 3.122        | 0.000    | 0.894| 0.014|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_012089| ABCB10       | NA           | NA       | NA   | NA   | -0.236| 0.787|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_005689| ABCB6        | NA           | NA       | NA   | NA   | -0.111| 0.877|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_007188| ABCB8        | NA           | NA       | NA   | NA   | -0.060| 0.951|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_177478| FTMT         | NA           | NA       | NA   | NA   | -0.414| 0.514|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_001161706| FXN    | NA           | NA       | NA   | NA   | 0.571| 0.576|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_031212 | SLC25A28     | NA           | NA       | NA   | NA   | 0.030| 0.983|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_016612 | SLC25A37     | NA           | NA       | NA   | NA   | -0.349| 0.433|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_017875 | SLC25A38     | NA           | NA       | NA   | NA   | 0.336| 0.385|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_016016 | SLC25A39     | NA           | NA       | NA   | NA   | 0.121| 0.849|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_016462 | TMEM14C      | NA           | NA       | NA   | NA   | 0.477| 0.161|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NM_000714 | TSPO         | NA           | NA       | NA   | NA   | 0.724| 0.906|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NA       | NA           | -0.124       | 0.906    | -0.090| 0.810| 0.696| 0.158|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NA       | NA           | -0.284       | 0.521    | 0.106| 0.757| 0.550| 0.159|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NA       | NA           | -0.036       | 0.982    | 1.272| 0.000| 0.044| 0.996|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NA       | NA           | ND           | ND       | ND   | ND   | ND   | ND   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NA       | NA           | -0.244       | 0.732    | 0.547| 0.396| -1.110| 0.010|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NA       | NA           | 0.671        | 0.360    | 1.037| 0.000| 0.313| 0.857|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Note:** The table represents gene expression data with values indicating expression levels. The columns likely represent different conditions or samples, while rows correspond to genes. The values in the table are numerical, possibly indicating fold changes or expression levels, with NA indicating not applicable or missing data.
| Gene ID      | Gene Name | NM_016612 | NM_017875 | NM_016016 | NM_016462 | NM_000714 | NM_012089 | NM_005689 | NM_007188 | NM_016462 | NM_000714 |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| SLC25A37    | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| SLC25A38    | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| SLC25A39    | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| TMEM14C     | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| TSPO        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| ABCB10      | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| ABCB6       | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| ABCB8       | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| FTMT        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| FXN         | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| SLC25A28    | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| SLC25A37    | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| SLC25A38    | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| TMEM14C     | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| TSPO        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |

**G25+Palm**
**Supplementary Table S6.** Quantitative data related to the transcriptomic profiles of mitochondrial calcium transport genes in human islets upon metabolic stress. NA: Not applicable (condition not tested); ND: not detected.

| Accession (NCBI Ref. Sequence) | Gene symbol | Donor #1 Log2 FC | Adjusted p | Donor #2 Log2 FC | Adjusted p | Donor #3 Log2 FC | Adjusted p | Donor #4 Log2 FC | Adjusted p | Donor #5 Log2 FC | Adjusted p |
|-------------------------------|-------------|------------------|------------|------------------|------------|------------------|------------|------------------|------------|------------------|------------|
| G25+Olea+Palm                |             |                  |            |                  |            |                  |            |                  |            |                  |            |
| NM_001270679                  | MCU         | -0.045           | 0.974      | -0.080           | 0.933      | NA               | NA         | -0.134           | 0.801      | NA               | NA         |
| NM_0010031713                 | MCU         | -0.081           | 0.913      | -0.131           | 0.841      | NA               | NA         | 0.116            | 0.833      | NA               | NA         |
| NM_006077                     | MICU1       | -0.282           | 0.503      | 0.094            | 0.895      | NA               | NA         | -0.354           | 0.331      | NA               | NA         |
| NM_152726                     | MICU2       | -0.852           | 0.005      | 0.134            | 0.832      | NA               | NA         | -0.154           | 0.768      | NA               | NA         |
| NM_181723                     | MICU3       | -0.939           | 0.008      | -0.526           | 0.400      | NA               | NA         | 0.183            | 0.746      | NA               | NA         |
| NM_024959                     | SLC8B1      | 0.742            | 0.104      | 0.546            | 0.309      | NA               | NA         | -0.113           | 0.871      | NA               | NA         |
| NM_033318                     | SMDT1       | 0.754            | 0.048      | 0.289            | 0.558      | NA               | NA         | 0.101            | 0.857      | NA               | NA         |
| G25+Olea                      |             |                  |            |                  |            |                  |            |                  |            |                  |            |
| NM_001270679                  | MCU         | -0.032           | 0.997      | -0.030           | 1.000      | NA               | NA         | NA               | NA         | NA               | NA         |
| NM_0010031713                 | MCU         | -0.188           | 0.767      | -0.048           | 1.000      | NA               | NA         | NA               | NA         | NA               | NA         |
| NM_006077                     | MICU1       | 0.075            | 0.935      | -0.146           | 1.000      | NA               | NA         | NA               | NA         | NA               | NA         |
| NM_152726                     | MICU2       | -0.300           | 0.450      | 0.107            | 1.000      | NA               | NA         | NA               | NA         | NA               | NA         |
| NM_181723                     | MICU3       | -0.562           | 0.161      | 0.289            | 1.000      | NA               | NA         | NA               | NA         | NA               | NA         |
| NM_024959                     | SLC8B1      | 0.276            | 0.719      | -0.676           | 1.000      | NA               | NA         | NA               | NA         | NA               | NA         |
| NM_033318                     | SMDT1       | 0.918            | 0.013      | 0.260            | 1.000      | NA               | NA         | NA               | NA         | NA               | NA         |
| G25                          |             |                  |            |                  |            |                  |            |                  |            |                  |            |
| NM_001270679                  | MCU         | 0.109            | 0.828      | -0.075           | 0.947      | 0.040            | 0.980      | -0.686           | 0.012      | NA               | NA         |
| NM_0010031713                 | MCU         | 0.073            | 0.934      | -0.407           | 0.348      | 0.000            | 1.000      | 0.231            | 0.459      | NA               | NA         |
| NM_006077                     | MICU1       | -0.100           | 0.847      | -0.092           | 0.891      | -0.078           | 0.924      | 0.635            | 0.014      | NA               | NA         |
| NM_152726                     | MICU2       | -0.819           | 0.006      | 0.273            | 0.545      | -0.304           | 0.476      | 0.269            | 0.395      | NA               | NA         |
| NM_181723                     | MICU3       | -1.102           | 0.002      | -0.640           | 0.349      | -0.200           | 0.810      | -0.106           | 0.820      | NA               | NA         |
| NM_024959                     | SLC8B1      | 0.913            | 0.025      | 0.394            | 0.498      | 0.766            | 0.013      | -0.593           | 0.082      | NA               | NA         |
| NM_033318                     | SMDT1       | 1.093            | 0.001      | 0.789            | 0.018      | -0.472           | 0.155      | -0.048           | 0.910      | NA               | NA         |

NA: Not applicable (condition not tested); ND: not detected.
|          |     |     |     |     |     |      |      |      |      |     |
|----------|-----|-----|-----|-----|-----|------|------|------|------|-----|
| NM_006077 | MICU1 | NA  | NA  | NA  | NA  | -0.047 | 0.963 | NA  | NA  | 0.061 | 1.000 |
| NM_152726 | MICU2 | NA  | NA  | NA  | NA  | -0.091 | 0.902 | NA  | NA  | -0.226 | 0.821 |
| NM_181723 | MICU3 | NA  | NA  | NA  | NA  | -0.779 | 0.123 | NA  | NA  | -0.343 | 0.742 |
| NM_024959 | SLC8B1 | NA  | NA  | NA  | NA  | 0.647  | 0.053 | NA  | NA  | 0.216  | 0.923 |
| NM_033318 | SMDT1 | NA  | NA  | NA  | NA  | -0.435 | 0.205 | NA  | NA  | -0.063 | 1.000 |
| NM_001270679 | MCU | NA  | NA  | NA  | NA  | 0.014  | 1.000 | -0.239 | 0.426 | 0.081  | 0.962 |
| NM_001031713 | MCUR1 | NA  | NA  | NA  | NA  | -0.028 | 0.990 | -0.034 | 0.934 | 0.793  | 0.011 |
| NM_006077 | MICU1 | NA  | NA  | NA  | NA  | -0.116 | 0.845 | 0.328 | 0.230 | 0.165  | 0.838 |
| NM_152726 | MICU2 | NA  | NA  | NA  | NA  | -0.381 | 0.301 | 0.302 | 0.295 | -0.087 | 0.949 |
| NM_181723 | MICU3 | NA  | NA  | NA  | NA  | -0.786 | 0.081 | 0.090 | 0.822 | 0.230  | 0.804 |
| NM_024959 | SLC8B1 | NA  | NA  | NA  | NA  | 0.819  | 0.006 | -0.453 | 0.177 | 0.071  | 0.988 |
| NM_033318 | SMDT1 | NA  | NA  | NA  | NA  | -0.410 | 0.224 | 0.077 | 0.823 | 0.071  | 0.965 |
| G25+Olea |     |     |     |     |     |      |      |      |      |     |
| G25+Palm |     |     |     |     |     |      |      |      |      |     |
| Species          | Accession NCBI Ref Seq. | Primer name                                      | Sequence                                                                 |
|------------------|-------------------------|--------------------------------------------------|--------------------------------------------------------------------------|
| *Homo sapiens*   | NM_001358345.2          | Solute carrier family 25 member 10 (SLC25A10), transcript variant 1, mRNA | Fwd: 5’- ATCCTGGCACTCTACAGCGG-3’  
|                  |                         |                                                  | Rev: 5’- GTCTCGTAGATGGCGAACCAG-3’                                     |
| *Homo sapiens*   | NM_003562.5             | Solute carrier family 25 member 11 (SLC25A11), transcript variant 1, mRNA | Fwd: 5’- TGCCCTTTGTGGGAACACCAG-3’  
|                  |                         |                                                  | Rev: 5’- ACATTTTTGTAGCCACGGCG-3’                                      |
| *Homo sapiens*   | NM_001191060.2          | Solute carrier family 25 member 22 (SLC25A22), transcript variant 1, mRNA | Fwd: 5’- GTGGCATTGCCGGTCTCTAC-3’  
|                  |                         |                                                  | Rev: 5’- GAGCAGGGAGTACACCCACAG-3’                                     |
| *Homo sapiens*   | NM_001358345.2          | Solute carrier family 8 member B1 (SLC8B1), transcript variant 3, mRNA | Fwd: 5’- CCAGCTTTAGGTGAACCAG-3’  
|                  |                         |                                                  | Rev: 5’- GAGTCAGCGCGTGACAGACA-3’                                     |
| *Homo sapiens*   | NM_012458.4             | Translocase of inner mitochondrial membrane 13 (TIMM13), mRNA | Fwd: 5’- GTGAAAGTCAGATCGCCGT-3’  
|                  |                         |                                                  | Rev: 5’- AGCCCCAGGTTCCTATAC-3’                                       |
| *Homo sapiens*   | NM_021130.5             | Peptidylprolyl isomerase A (PPIA), transcript variant 1, mRNA | Fwd: 5’- ATCTGCACGTCCAAGACTGA-3’  
|                  |                         |                                                  | Rev: 5’- TCTTGCTGGTCTTGCCATTCA-3’                                    |

**Supplementary Table S7:** Primers used for quantitative RT-PCR analysis
**Supplementary Figure S1.** Functional interaction network of human (a) mitochondrial calcium transport genes; (b) outer and inner mitochondrial membrane translocases TOM/TIM machinery; (c) electron transport chain machinery and related carriers; (d) mitochondrial iron transport genes. Nodes were connected using the STRING interaction knowledgebase with a confidence score >0.4.
Supplementary Figure S2. Effects of high 25 mM glucose (G25) and 0.4 mM oleate (Olea) or palmitate (Palm) on the transcriptional regulation of the electron transport chain machinery. Human islets were exposed to (a) Olea at G5.5, (b) Palm at G5.5, (c) G25, (d) G25+Olea+Palm, (e) G25+Olea, and (f) G25+Palm for 3 days before RNA-Seq analysis. Effects of culture conditions on transcript levels are compared to standard G5.5 medium and shown as upregulated (red), downregulated (blue), or unchanged (white). Missing values are represented in grey. Each disk is split into individual changes for the different donors. Color code reflects the transcriptional changes in log₂ fold changes (log₂ FC) for that particular gene in individual donors. *adjusted p<0.05, **adjusted p<0.01, ***adjusted p<0.001 between control 5.5 mM glucose and the specific culture condition.
Supplementary Figure S3. Effects of high 25 mM glucose (G25) and 0.4 mM oleate (Olea) or palmitate (Palm) on the transcriptional regulation of mitochondrial iron transport genes. Human islets were exposed to (a) Olea at G5.5, (b) Palm at G5.5, (c) G25, (d) G25+Olea+Palm, (e) G25+Olea, and (f) G25+Palm for 3 days before RNA-Seq analysis. Effects of culture conditions on transcript levels are compared to standard G5.5 medium and shown as upregulated (red), downregulated (blue), or unchanged (white). Missing values are represented in grey. Each disk is split into individual changes for the different donors. Color code reflects the transcriptional changes in log₂ fold changes (log₂ FC) for that particular gene in individual donors.

*adjusted p<0.05, **adjusted p<0.01, ***adjusted p<0.001 between control 5.5 mM glucose and the specific culture condition.
Supplementary Figure S4: Effects of high 25 mM glucose (G25) and 0.4 mM palmitate (Palm) or oleate (Olea) on mRNA levels of selected genes in human islets measured by quantitative RT–PCR, normalized to cyclophilin A (PPIA). See Supplementary Table S1 for details on the donors.