**Supplementary Table 1.** TaqMan gene expression assays.

|  |  |
| --- | --- |
| **Gene** | **TaqMan Assay ID** |
| *MT1A*  | Hs00831826\_s1 |
| *MT1B*  | Hs01875377\_s1 |
| *MT1E*  | Hs01938284\_g1 |
| *MT1F*  | Hs00744661\_sH |
| *MT1G*  | Hs04401199\_s1 |
| *MT1H*  | Hs00823168\_g1 |
| *MT1L*  | Hs01591331\_g1 |
| *MT1M*  | Hs00828387\_g1 |
| *MT1X*  | Hs00745167\_sH |
| *MT2A*  | Hs02379661\_g1 |
| *MT3*  | Hs01921768\_s1 |
| *MT4* | Hs00262914\_m1 |
| *SLC30A1* | Hs00253602\_m1 |
| *SLC30A2* | Hs00936934\_m1 |
| *SLC30A3* | Hs00900701\_g1 |
| *SLC30A4* | Hs00203308\_m1 |
| *SLC30A5* | Hs00224708\_m1 |
| *SLC30A6* | Hs00398659\_m1 |
| *SLC30A7* | Hs00981941\_m1 |
| *SLC30A8* | Hs00545183\_m1 |
| *SLC30A9* | Hs00197118\_m1 |
| *SLC30A10*  | Hs00218883\_m1 |
| *SLC39A1*  | Hs00205358\_m1 |
| *SLC39A2* | Hs01113547\_g1 |
| *SLC39A3* | Hs00292942\_m1 |
| *SLC39A4*  | Hs01592433\_g1 |
| *SLC39A5* | Hs00379938\_m1 |
| *SLC39A6* | Hs01086822\_m1 |
| *SLC39A7* | Hs00199596\_m1 |
| *SLC39A8* | Hs01061804\_g1 |
| *SLC39A9* | Hs04276955\_m1 |
| *SLC39A10* | Hs01547327\_m1 |
| *SLC39A11* | Hs00911336\_m1 |
| *SLC39A12* | Hs00398303\_m1 |
| *SLC39A13*  | Hs00378317\_m1 |
| *SLC39A14* | Hs00299262\_m1 |
| *18S*  | Hs99999901\_s1 |
| *ACTB* | Hs01060665\_g1 |

**Supplementary Table 2.** Metallothionein and zinc transporter ∆CT values in PBMCs exposed to zinc and TPEN *in vitro*.

|  |  |  |
| --- | --- | --- |
| **Gene** | **∆CT**  | **P-value** |
| **Control** | **10µM ZnSO4** | **50µM ZnSO4** | **50µM ZnSO4 + 5µM TPEN** |
| *MT1A*  | 15.2 ± 0.7a | 14.0 ± 0.5a | 6.2 ± 0.8b | 14.6 ± 1.0a | <0.0001 |
| *MT1B*  | 15.0 ± 0.4a | 15.3 ± 0.3a | 13.8 ± 0.8b | 15.1 ± 0.3a | 0.0016 |
| *MT1E*  | 14.2 ± 0.7a | 11.4 ± 0.5b | 7.1 ± 0.5c | 12.0 ± 0.7b | <0.0001 |
| *MT1F*  | 14.7 ± 0.4a | 11.0 ± 0.9b | 7.2 ± 0.6c | 11.7 ± 0.6b | <0.0001 |
| *MT1G*  | 15.0 ± 0.4a | 11.5 ± 0.9b | 6.5 ± 0.5c | 12.4 ± 0.4b | <0.0001 |
| *MT1H*  | 15.9 ± 0.7a | 11.7 ± 1.0b | 6.3 ± 0.6c | 12.7 ± 0.7b | <0.0001 |
| *MT1L*  | 15.6 ± 0.4a | 10.2 ± 1.0b | 3.7 ± 0.7c | 11.1 ± 1.2b | <0.0001 |
| *MT1M*  | 17.7 ± 1.9 (n=2)a | 11.2 ± 0.9b | 5.8 ± 0.6c | 12.6 ± 0.4b | <0.0001 |
| *MT1X*  | 12.1 ± 0.4a | 8.4 ± 0.7b | 4.4 ± 0.5c | 9.2 ± 0.4b | <0.0001 |
| *MT2A*  | 12.9 ± 0.8a | 10.3 ± 0.7b | 6.8 ± 0.4c | 11.3 ± 0.3b | <0.0001 |
| *MT3*  | 13.4 ± 0.5 | 13.8 ± 0.8 | 13.1 ± 0.8 | 14.2 ± 0.7 | 0.1600 |
| *MT4* | ND | ND | ND | ND | - |
| *SLC30A1* | 8.8 ± 0.7a | 7.7 ± 0.5b | 6.1 ± 0.5c | 8.2 ± 0.3a,b | <0.0001 |
| *SLC30A2* | ND | ND | 14.8 ± 0.5 | ND | - |
| *SLC30A3* | 15.4 ± 1.2 (n=2) | 15.5 ± 0.8 (n=4) | 13.7 ± 1.3 | 14.6 ± 0.7 (n=4) | 0.1139 |
| *SLC30A4* | 14.0 ± 0.4 | 13.9 ± 0.5 | 13.7 ± 0.8 | 14.1 ± 0.5 | 0.6654 |
| *SLC30A5* | 10.8 ± 0.4 | 10.6 ± 0.5 | 10.1 ± 0.6 | 10.5 ± 0.6 | 0.2289 |
| *SLC30A6* | 11.9 ± 0.6 | 11.6 ± 0.7 | 11.0 ± 0.6 | 11.6 ± 0.7 | 0.2810 |
| *SLC30A7* | 9.1 ± 0.4 | 8.9 ± 0.4 | 8.5 ± 0.6 | 8.9 ± 0.7 | 0.4338 |
| *SLC30A8* | ND | 15.8 ± 0.8 (n=2) | 15.5 (n=1) | 15.9 ± 1.3 (n=2) | - |
| *SLC30A9* | 11.4 ± 0.5 | 11.3 ± 0.8 | 10.7 ± 0.8 | 11.0 ± 0.8 | 0.4072 |
| *SLC30A10*  | 16.7 (n=1) | ND | ND | ND | - |
| *SLC39A1*  | 10.8 ± 0.8a | 10.0 ± 0.4a | 9.9 ± 0.5a | 10.7 ± 0.4a | 0.0349 |
| *SLC39A2* | 15.6 ± 0.9 | 15.1 ± 0.8 | 15.0 ± 1.3 | 15.6 ± 0.6 (n=4) | 0.6575 |
| *SLC39A3* | 12.6 ± 0.4 | 12.4 ± 0.3 | 12.2 ± 0.6 | 12.8 ± 0.6 | 0.2459 |
| *SLC39A4*  | 13.2 ± 0.2 | 13.2 ± 0.4 | 12.9 ± 0.3 | 13.4 ± 0.3 | 0.1031 |
| *SLC39A5* | 14.9 ± 1.0 (n=4) | 15.4 ± 0.9 | 15.4 ± 0.9 | 15.2 ± 1.0 | 0.8092 |
| *SLC39A6* | 11.1 ± 0.4 | 10.9 ± 0.3 | 10.4 ± 0.6 | 11.0 ± 0.6 | 0.1891 |
| *SLC39A7* | 12.2 ± 0.5 | 12.0 ± 0.3 | 11.7 ± 0.5 | 12.3 ± 0.4 | 0.1662 |
| *SLC39A8* | 11.1 ± 0.6a | 10.1 ± 0.5a | 8.8 ± 0.8b | 10.3 ± 0.6a | 0.0003 |
| *SLC39A9* | 11.1 ± 0.4 | 10.9 ± 0.4 | 10.8 ± 0.5 | 11.1 ± 0.6 | 0.7223 |
| *SLC39A10* | 11.1 ± 0.5 | 11.1 ± 0.4 | 11.4 ± 0.6 | 11.3 ± 0.7 | 0.8685 |
| *SLC39A11* | 11.9 ± 0.5a | 11.5 ± 0.3a,b | 10.8 ± 0.4b | 11.9 ± 0.4a | 0.0029 |
| *SLC39A12* | 15.4 (n=1) | 16.4 ± 0.1 (n=3) | 15.3 ± 0.6 | 16.4 ± 0.7 (n=3) | 0.0637 |
| *SLC39A13*  | 13.1 ± 0.5 | 12.8 ± 0.2 | 12.5 ± 0.6 | 13.2 ± 0.6 | 0.1546 |
| *SLC39A14* | 14.9 ± 0.4 | 14.7 ± 0.5 | 14.6 ± 0.8 | 14.9 ± 0.6 | 0.7098 |

∆CT values of metallothionein isoforms and subtypes and zinc transporters in control cells and cells cultured with 10 μM ZnSO4 or 50 μM ZnSO4 or with 50 μM ZnSO4 plus TPEN for 24 h. A corresponding heat map of these data is shown in Figure 1. Values are means ± SD, n=5/treatment unless replicates within a treatment were not detected. P-values and superscript letters are for log-transformed data. Different letters within a row indicate a significant difference (*P*<0.05). CT, cycle threshold; ND, not detected.