**Supplemental Digital Content 3**

**Correlation Analysis of levels of mRNA in Urinary Cells**

The spearman coefficients (rs) and the associated P values for each pair of log transformed, 18S-normalized mRNA measures are shown in Supplemental Table 2.

The correlations for the 21 subjects with graft dysfunction and biopsy-proven acute rejection are shown in Table 2A. The correlations for the 25 subjects with stable graft function and normal biopsy results are shown in Table 2B.

**Table 2. Spearman Rank Correlations among Urinary Cells mRNA measures**a

A. Acute Rejection Sample (N=21 Subjects)b

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Spearman Coefficient (rs),** *P value* | | | | | | | | |
|  | **OX40** | **OX40L** | **PD-1** | **PD-L1** | **PD-L2** | **Foxp3** | **Perforin** | **Granzyme B** |
| **OX40** | 1 | 0.67 | 0.15 | 0.60 | 0.61 | 0.63 | 0.42 | 0.62 |
|  |  | *0.0008* | *0.4* | *0.004* | *0.003* | *0.002* | *0.05* | *0.002* |
|  |  |  |  |  |  |  |  |  |
| **OX40L** |  | 1 | 0.30 | 0.42 | 0.51 | 0.75 | 0.71 | 0.51 |
|  |  |  | *0.1* | *0.05* | *0.01* | *<0.0001* | *0.0002* | *0.01* |
|  |  |  |  |  |  |  |  |  |
| **PD-1** |  |  | 1 | -0.13 | -0.17 | 0.35 | 0.61 | 0.27 |
|  |  |  |  | *0.5* | *0.4* | *0.1* | *0.003* | *0.2* |
|  |  |  |  |  |  |  |  |  |
| **PD-L1** |  |  |  | 1 | 0.80 | 0.07 | 0.22 | 0.47 |
|  |  |  |  |  | *<0.0001* | *0.7* | *0.3* | *0.02* |
|  |  |  |  |  |  |  |  |  |
| **PD-L2** |  |  |  |  | 1 | 0.33 | 0.40 | 0.59 |
|  |  |  |  |  |  | *0.1* | *0.06* | *0.004* |
|  |  |  |  |  |  |  |  |  |
| **Foxp3** |  |  |  |  |  | 1 | 0.74 | 0.57 |
|  |  |  |  |  |  |  | *0.0001* | *0.006* |
|  |  |  |  |  |  |  |  |  |
| **Perforin** |  |  |  |  |  |  | 1 | 0.68 |
|  |  |  |  |  |  |  |  | *0.0006* |
|  |  |  |  |  |  |  |  |  |
| **Granzyme B** |  |  |  |  |  |  |  | 1 |

B. Stable Samples (N=25 Subjects)c

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Spearman Coefficient (rs),** *P value* | | | | | | | | |
|  | **OX40** | **OX40L** | **PD-1** | **PD-L1** | **PD-L2** | **Foxp3** | **Perforin** | **Granzyme B** |
| **OX40** | 1 | 0.84 | 0.31 | 0.41 | 0.51 | 0.62 | 0.47 | 0.40 |
|  |  | *<0.0001* | *0.1* | *0.03* | *0.008* | *0.0009* | *0.01* | *0.04* |
|  |  |  |  |  |  |  |  |  |
| **OX40L** |  | 1 | 0.40 | 0.44 | 0.48 | 0.35 | 0.33 | 0.39 |
|  |  |  | *0.04* | *0.02* | *0.01* | *0.08* | *0.1* | *0.04* |
|  |  |  |  |  |  |  |  |  |
| **PD-1** |  |  | 1 | 0.12 | 0.05 | 0.26 | 0.04 | 0.16 |
|  |  |  |  | *0.5* | *0.8* | *0.2* | *0.8* | *0.4* |
|  |  |  |  |  |  |  |  |  |
| **PD-L1** |  |  |  | 1 | 0.60 | 0.42 | 0.35 | 0.21 |
|  |  |  |  |  | *0.001* | *0.03* | *0.08* | *0.3* |
|  |  |  |  |  |  |  |  |  |
| **PD-L2** |  |  |  |  | 1 | 0.60 | 0.59 | 0.63 |
|  |  |  |  |  |  | *0.001* | *0.001* | *0.0007* |
|  |  |  |  |  |  |  |  |  |
| **Foxp3** |  |  |  |  |  | 1 | 0.67 | 0.45 |
|  |  |  |  |  |  |  | *0.0002* | *0.02* |
|  |  |  |  |  |  |  |  |  |
| **Perforin** |  |  |  |  |  |  | 1 | 0.78 |
|  |  |  |  |  |  |  |  | *<0.0001* |
|  |  |  |  |  |  |  |  |  |
| **Granzyme B** |  |  |  |  |  |  |  | 1 |

aThe spearman coefficients (rs) and the associated P values (*italics*) for each pair of log transformed, 18S-normalized mRNA measures are shown.

bTable 2A shows the correlations for the 21 subjects with graft dysfunction and biopsy-proven acute rejection.

cTable 2B shows the correlations for the 25 subjects with stable graft function and normal biopsy results.