Supplementary Materials

The Prognostic Value and Immune Infiltration of USP10 in Pan-Cancer: A Potential Therapeutic Target

Supplementary Table 1. Analysis of USP10 Expression in Cancer vs. Normal Tissue by Oncomine Database.

| Cancer          | Cancer Type                          | P-value | Fold Change | Rank (%) | Sample | Reference (PMID) |
|-----------------|--------------------------------------|---------|-------------|----------|--------|------------------|
| Blader          | Superficial Bladder Cancer           | 1.91E-06 | -1.613      | 12       | 157    | 16432078         |
| Brain and CNS   | Brain Glioblastoma                   | 3.83E-06 | -1.589      | 15       | 557    | TCGA             |
| Breast          | Ductal Breast Carcinoma              | 9.86E-05 | 2.42        | 10       | 47     | 16473279         |
| Breast          | Invasive Ductal Breast Carcinoma     | 7.45E-10 | 1.591       | 22       | 593    | TCGA             |
| Cervical        | Cervical Cancer                      | 2.52E-05 | 1.917       | 16       | 84     | 17510386         |
| Colorectal      | Cecum Adenocarcinoma                 | 4.50E-11 | 1.755       | 4        | 237    | TCGA             |
| Colorectal      | Rectal Adenocarcinoma                | 1.27E-10 | 1.661       | 11       | 237    | TCGA             |
| Colorectal      | Colon Adenocarcinoma                 | 6.57E-11 | 1.662       | 12       | 237    | TCGA             |
| Colorectal      | Colon Adenoma                        | 1.85E-07 | 1.558       | 15       | 64     | 18171984         |
| Colorectal      | Rectal Adenoma                       | 3.45E-04 | 1.753       | 15       | 64     | 18171984         |
| Colorectal      | Colon Carcinoma                      | 2.55E-05 | 2.245       | 15       | 40     | 20957034         |
| Colorectal      | Cecum Adenocarcinoma                 | 5.09E-04 | 1.513       | 16       | 105    | 17615082         |
| Colorectal      | Colorectal Carcinoma                 | 7.44E-06 | 1.574       | 16       | 82     | 20143136         |
| Gastric         | Gastric Intestinal Type Adenocarcinoma | 1.17E-05 | 1.755       | 16       | 69     | 19081245         |
| Head and Neck   | Head and Neck Squamous Cell Carcinoma | 1.10E-08 | 1.862       | 5        | 54     | 14729608         |
| Head and Neck   | Floor of the Mouth Carcinoma         | 4.00E-04 | 2.025       | 8        | 84     | 17510386         |
| Head and Neck   | Tongue Carcinoma                     | 1.18E-04 | 1.595       | 9        | 84     | 17510386         |
| Kidney          | Clear Cell Sarcoma of the Kidney     | 4.98E-06 | -1.586      | 2        | 35     | 16299227         |
| Leakemia        | B-Cell Acute Lymphoblastic Leukemia  | 1.30E-04 | 1.659       | 3        | 28     | 16267031         |
| Lung            | Lung Adenocarcinoma                  | 2.22E-08 | 1.559       | 7        | 156    | 20421987         |
| Lung            | Squamous Cell Lung Carcinoma         | 5.33E-08 | 1.759       | 9        | 156    | 20421987         |
| Lung            | Large Cell Lung Carcinoma            | 1.03E-04 | 1.637       | 12       | 156    | 20421987         |
| Lymphoma        | Anaplastic Large Cell Lymphoma       | 6.13E-05 | 1.848       | 10       | 60     | 17304354         |
| Lymphoma        | Angioimmunoblastic T-Cell Lymphoma   | 4.16E-04 | 1.851       | 15       | 60     | 17304354         |
| Melanoma        | Benign Melanocytic Skin Nevus        | 4.13E-05 | 2.252       | 4        | 70     | 16243793         |
| Melanoma        | Cutaneous Melanoma                   | 8.57E-06 | 3.033       | 6        | 70     | 16243793         |
| Myeloma         | Smoldering Myeloma                   | 7.49E-04 | 1.584       | 28       | 78     | 17023574         |
| Ovarian         | Ovarian Carcinoma                    | 1.77E-05 | -1.669      | 15       | 195    | 18593951         |
| Prostate        | Prostate Carcinoma                   | 8.32E-04 | 2.155       | 12       | 102    | 12086878         |
| Sarcoma         | Clear Cell Sarcoma of the Kidney     | 4.98E-06 | -1.586      | 2        | 35     | 16299227         |
| Sarcoma         | Myxofibrosarcoma                     | 8.41E-06 | -1.503      | 7        | 158    | 20601955         |
| Cancer type        | Dataset | Endpoint | N   | Hazard ratio (95%) | Cox P   |
|-------------------|---------|----------|-----|--------------------|---------|
| **Bladder cancer** |         |          |     |                    |         |
|                   | GSE5287 | OS       | 30  | 1.94 [0.83 - 4.55] | 0.12642 |
|                   | GSE5287 | OS       | 30  | 1.85 [0.63 - 5.47] | 0.26525 |
|                   | GSE13507| OS       | 165 | 0.89 [0.60 - 1.32] | 0.55742 |
|                   | GSE13507| DSS      | 165 | 1.21 [0.67 - 2.21] | 0.52511 |
| **Blood cancer**  |         |          |     |                    |         |
|                   | GSE12417-GPL96 | OS | 163 | 0.92 [0.65 - 1.29] | 0.627953 |
|                   | GSE12417-GPL96 | OS | 163 | 0.97 [0.58 - 1.60] | 0.898213 |
|                   | GSE12417-GPL570 | OS | 79  | 1.24 [0.56 - 2.74] | 0.594744 |
|                   | GSE12417-GPL570 | OS | 79  | 1.18 [0.69 - 2.01] | 0.541867 |
|                   | GSE5122  | OS       | 58  | 1.57 [0.91 - 2.71] | 0.10791 |
|                   | GSE5122  | OS       | 58  | 1.64 [1.00 - 2.69] | 0.052198 |
|                   | GSE8970  | OS       | 34  | 0.70 [0.37 - 1.31] | 0.267191 |
|                   | GSE8970  | OS       | 34  | 1.25 [0.75 - 2.07] | 0.386637 |
|                   | GSE4475  | OS       | 158 | 1.28 [0.70 - 2.33] | 0.430043 |
|                   | GSE4475  | OS       | 158 | 1.61 [0.82 - 3.17] | 0.165915 |
|                   | E-TABM-346 | EFS | 53  | 2.31 [0.82 - 6.50] | 0.1104  |
|                   | E-TABM-346 | EFS | 53  | 0.85 [0.27 - 2.71] | 0.789643 |
|                   | E-TABM-346 | OS  | 53  | 2.42 [0.79 - 7.45] | 0.123136 |
|                   | GSE16131-GPL96 | OS | 180 | 0.70 [0.46 - 1.07] | 0.096713 |
|                   | GSE16131-GPL96 | OS | 180 | 0.62 [0.38 - 1.02] | 0.061122 |
|                   | GSE2658  | DSS      | 559 | 1.66 [0.99 - 2.79] | 0.056722 |
|                   | GSE2658  | DSS      | 559 | 1.52 [0.89 - 2.57] | 0.121894 |
| **Brain cancer**  |         |          |     |                    |         |
|                   | GSE4271-GPL96 | OS | 77  | 0.47 [0.26 - 0.85] | 0.012106 |
|                   | GSE4271-GPL96 | OS | 77  | 0.58 [0.31 - 1.09] | 0.092217 |
|                   | GSE7696  | OS       | 70  | 0.64 [0.16 - 2.56] | 0.523636 |
|                   | GSE7696  | OS       | 70  | 1.02 [0.59 - 1.77] | 0.930691 |
|                   | MGH-glioma | OS  | 50  | 0.98 [0.36 - 2.66] | 0.964566 |
|                   | GSE4412-GPL96 | OS | 74  | 0.31 [0.16 - 0.59] | 0.000393 |
|                   | GSE4412-GPL96 | OS | 74  | 0.47 [0.22 - 1.04] | 0.063053 |
|                   | GSE16581 | OS       | 67  | 20.90 [1.06 - 412.54] | 0.04577 |
|                   | GSE16581 | OS       | 67  | 7.71 [0.52 - 113.28] | 0.136261 |
| **Breast cancer** |         |          |     |                    |         |
|                   | GSE19615 | DMFS     | 115 | 1.90 [0.70 - 5.18] | 0.209553 |
|                   | GSE19615 | DMFS     | 115 | 2.26 [0.65 - 7.85] | 0.200771 |
|                   | GSE3143  | OS       | 158 | 1.43 [0.69 - 2.97] | 0.338503 |
|                   | GSE7849  | DFS      | 76  | 0.84 [0.29 - 2.46] | 0.748506 |
|                   | GSE12276 | RFS      | 204 | 1.28 [0.95 - 1.74] | 0.109208 |
|                   | GSE12276 | RFS      | 204 | 1.19 [0.88 - 1.62] | 0.255231 |
|                   | GSE6532-GPL570 | RFS | 87  | 1.34 [0.63 - 2.86] | 0.451899 |
|                   | GSE6532-GPL570 | DMFS | 87  | 0.74 [0.33 - 1.63] | 0.45023 |
| Dataset       | Design | Sample | Mean | 95% CI | p-value |
|---------------|--------|--------|------|--------|---------|
| GSE6532-GPL570| DMFS   | 87     | 1.34 | [0.63 - 2.86] | 0.451899 |
| GSE6532-GPL570| RFS    | 87     | 0.74 | [0.33 - 1.63] | 0.45023  |
| GSE9195       | DMFS   | 77     | 1.81 | [0.62 - 5.31] | 0.280564 |
| GSE9195       | RFS    | 77     | 1.08 | [0.38 - 3.07] | 0.88166  |
| GSE9195       | RFS    | 77     | 1.46 | [0.56 - 3.80] | 0.435409 |
| GSE12093      | DMFS   | 136    | 0.54 | [0.21 - 1.37] | 0.19386  |
| GSE12093      | DMFS   | 136    | 0.86 | [0.37 - 2.00] | 0.721811 |
| GSE11121      | DMFS   | 200    | 0.89 | [0.45 - 1.78] | 0.749067 |
| GSE11121      | DMFS   | 200    | 3.51 | [1.79 - 6.87] | 0.000251 |
| GSE9195       | RFS    | 77     | 1.08 | [0.38 - 3.07] | 0.435409 |
| GSE9195       | RFS    | 77     | 1.46 | [0.56 - 3.80] | 0.435409 |
| GSE9195       | RFS    | 77     | 1.81 | [0.62 - 5.31] | 0.280564 |
| GSE9195       | RFS    | 77     | 1.08 | [0.38 - 3.07] | 0.88166  |
| GSE9195       | RFS    | 77     | 1.46 | [0.56 - 3.80] | 0.435409 |
| GSE9195       | RFS    | 77     | 1.81 | [0.62 - 5.31] | 0.280564 |
| GSE9195       | RFS    | 77     | 1.08 | [0.38 - 3.07] | 0.88166  |
| GSE9195       | RFS    | 77     | 1.46 | [0.56 - 3.80] | 0.435409 |
| GSE9195       | RFS    | 77     | 1.81 | [0.62 - 5.31] | 0.280564 |
| GSE9195       | RFS    | 77     | 1.08 | [0.38 - 3.07] | 0.88166  |
| GSE9195       | RFS    | 77     | 1.46 | [0.56 - 3.80] | 0.435409 |
| GSE9195       | RFS    | 77     | 1.81 | [0.62 - 5.31] | 0.280564 |
| GSE9195       | RFS    | 77     | 1.08 | [0.38 - 3.07] | 0.88166  |
| GSE9195       | RFS    | 77     | 1.46 | [0.56 - 3.80] | 0.435409 |
| GSE9195       | RFS    | 77     | 1.81 | [0.62 - 5.31] | 0.280564 |
| GSE9195       | RFS    | 77     | 1.08 | [0.38 - 3.07] | 0.88166  |
| GSE9195       | RFS    | 77     | 1.46 | [0.56 - 3.80] | 0.435409 |
| GSE9195       | RFS    | 77     | 1.81 | [0.62 - 5.31] | 0.280564 |
| GSE9195       | RFS    | 77     | 1.08 | [0.38 - 3.07] | 0.88166  |
| GSE9195       | RFS    | 77     | 1.46 | [0.56 - 3.80] | 0.435409 |
| GSE9195       | RFS    | 77     | 1.81 | [0.62 - 5.31] | 0.280564 |
| Dataset   | Type | Sample Size | Hazard Ratio (95% CI) | p-value |
|-----------|------|-------------|-----------------------|---------|
| GSE2990   | DMFS | 125         | 0.88 [0.34 - 2.23]    | 0.780581 |
| GSE2990   | DMFS | 54          | 0.99 [0.57 - 1.72]    | 0.970942 |
| GSE7390   | RFS  | 198         | 1.33 [0.97 - 1.81]    | 0.072838 |
| GSE7390   | DMFS | 198         | 1.78 [1.15 - 2.74]    | 0.009123 |
| GSE7390   | OS   | 198         | 1.63 [1.04 - 2.54]    | 0.031925 |
| GSE7390   | DMFS | 198         | 1.50 [1.04 - 2.17]    | 0.030162 |
| GSE7390   | OS   | 198         | 1.50 [1.02 - 2.22]    | 0.041473 |

Colorectal cancer

| Dataset   | Type | Sample Size | Hazard Ratio (95% CI) | p-value |
|-----------|------|-------------|-----------------------|---------|
| GSE12945  | OS   | 62          | 2.25 [0.45 - 11.28]   | 0.324629 |
| GSE12945  | DFS  | 51          | 6.73 [0.49 - 93.36]   | 0.155194 |
| GSE12945  | OS   | 62          | 2.79 [0.45 - 17.44]   | 0.27134  |
| GSE12945  | DFS  | 51          | 4.51 [0.48 - 42.53]   | 0.18791  |
| GSE17536  | RFS  | 177         | 0.79 [0.35 - 1.80]    | 0.574519 |
| GSE17536  | OS   | 177         | 0.87 [0.50 - 1.49]    | 0.605519 |
| GSE17536  | DFS  | 145         | 0.81 [0.38 - 1.73]    | 0.59295  |
| GSE17536  | DFS  | 145         | 0.52 [0.19 - 1.44]    | 0.208157 |
| GSE14333  | DFS  | 226         | 0.46 [0.25 - 0.87]    | 0.016934 |
| GSE14333  | DFS  | 226         | 0.86 [0.49 - 1.52]    | 0.607554 |
| GSE17537  | OS   | 55          | 3.01 [1.29 - 7.04]    | 0.010908 |
| GSE17537  | DFS  | 55          | 4.58 [1.90 - 11.03]   | 0.000694 |
| GSE17537  | OS   | 55          | 2.70 [0.99 - 7.35]    | 0.05228  |
| GSE17537  | DSS  | 49          | 4.09 [1.44 - 11.62]   | 0.0081   |
| GSE17537  | DFS  | 55          | 3.06 [1.03 - 9.10]    | 0.044375 |
| GSE17537  | DSS  | 49          | 2.10 [0.61 - 7.17]    | 0.237012 |

Esophagus cancer

| Dataset   | Type | Sample Size | Hazard Ratio (95% CI) | p-value |
|-----------|------|-------------|-----------------------|---------|
| GSE11595  | OS   | 34          | 0.54 [0.18 - 1.65]    | 0.280266 |
| GSE11595  | OS   | 34          | 0.93 [0.32 - 2.70]    | 0.889276 |

Eye cancer

| Dataset   | Type | Sample Size | Hazard Ratio (95% CI) | p-value |
|-----------|------|-------------|-----------------------|---------|
| GSE22138  | DMFS | 63          | 0.79 [0.45 - 1.41]    | 0.426063 |
| GSE22138  | DMFS | 63          | 0.67 [0.39 - 1.16]    | 0.14966  |

Head and neck cancer

| Dataset   | Type | Sample Size | Hazard Ratio (95% CI) | p-value |
|-----------|------|-------------|-----------------------|---------|
| GSE2837   | RFS  | 28          | 0.60 [0.12 - 2.95]    | 0.531901 |
| GSE2837   | RFS  | 28          | 2.84 [0.00 - 2016.13] | 0.755772 |

Lung cancer

| Dataset   | Type | Sample Size | Hazard Ratio (95% CI) | p-value |
|-----------|------|-------------|-----------------------|---------|
| jacob-00182-CANDF | OS   | 82          | 0.44 [0.19 - 1.02]    | 0.054666 |
| jacob-00182-CANDF | OS   | 82          | 0.44 [0.12 - 1.62]    | 0.214745 |
| HARVARD-LC        | OS   | 84          | 1.38 [0.77 - 2.46]    | 0.277518 |
| jacob-00182-HLM   | OS   | 79          | 0.90 [0.38 - 2.12]    | 0.804682 |
| jacob-00182-HLM   | OS   | 79          | 1.04 [0.39 - 2.76]    | 0.934357 |
| MICHIGAN-LC       | OS   | 86          | 1.32 [0.43 - 4.04]    | 0.626447 |
| jacob-00182-MSK   | OS   | 104         | 1.34 [0.29 - 6.26]    | 0.708144 |
| jacob-00182-MSK   | OS   | 104         | 1.50 [0.57 - 3.93]    | 0.408888 |
| GSE13213          | OS   | 117         | 2.55 [1.24 - 5.25]    | 0.011283 |
| GSE13213          | OS   | 117         | 1.47 [1.05 - 2.06]    | 0.025945 |
| GSE31210          | OS   | 204         | 3.66 [0.90 - 14.89]   | 0.070205 |
| Study ID     | Platform | Tumor Type | Date | Median Fold Change | Lower CI | Upper CI | P Value |
|-------------|----------|------------|------|--------------------|----------|----------|---------|
| GSE31210    | RFS      | 204        |      | 5.58 [1.93 - 16.14]| 0.001494|
| GSE31210    | OS       | 204        |      | 1.25 [0.30 - 5.12] | 0.761312|
| GSE31210    | RFS      | 204        |      | 1.61 [0.56 - 4.63] | 0.373167|
| jacob-00182-UM | OS    | 178        |      | 0.82 [0.44 - 1.54] | 0.539144|
| jacob-00182-UM | OS    | 178        |      | 0.83 [0.33 - 2.06] | 0.687809|
| GSE11117    | OS       | 111        |      | 0.62 [0.34 - 1.16] | 0.135562|
| GSE14814    | DSS      | 90         |      | 1.11 [0.38 - 3.26] | 0.853846|
| GSE14814    | OS       | 90         |      | 1.28 [0.33 - 4.98] | 0.721632|
| GSE14814    | DSS      | 90         |      | 0.82 [0.17 - 3.88] | 0.806624|
| GSE4716-GPL3694 | OS | 50         |      | 3.08 [0.44 - 21.50]| 0.255716|
| GSE8894     | RFS      | 138        |      | 1.08 [0.86 - 1.36] | 0.490194|
| GSE4573     | OS       | 129        |      | 1.23 [0.58 - 2.63] | 0.584364|
| GSE17710    | RFS      | 56         |      | 1.42 [0.68 - 2.95] | 0.345448|
| GSE17710    | OS       | 56         |      | 1.34 [0.64 - 2.81] | 0.436522|
| GSE17710    | OS       | 56         |      | 1.56 [0.73 - 3.35] | 0.249261|
| Ovarian cancer |        |            |      |                    |          |
| GSE9891     | OS       | 278        |      | 0.64 [0.42 - 0.99] | 0.043284|
| GSE9891     | OS       | 278        |      | 0.75 [0.56 - 1.00] | 0.047007|
| DUKE-OC     | OS       | 133        |      | 1.14 [0.77 - 1.70] | 0.510993|
| DUKE-OC     | OS       | 133        |      | 0.90 [0.67 - 1.22] | 0.497325|
| GSE8841     | OS       | 81         |      | 0.54 [0.28 - 1.04] | 0.066864|
| GSE8841     | OS       | 81         |      | 1.97 [0.70 - 5.55] | 0.198476|
| GSE26712    | DFS      | 185        |      | 1.02 [0.70 - 1.50] | 0.900119|
| GSE26712    | DFS      | 185        |      | 1.15 [0.83 - 1.58] | 0.40071|
| GSE26712    | OS       | 185        |      | 0.93 [0.61 - 1.41] | 0.722658|
| GSE26712    | OS       | 185        |      | 1.04 [0.73 - 1.49] | 0.831497|
| GSE17260    | PFS      | 110        |      | 0.91 [0.54 - 1.56] | 0.737392|
| GSE17260    | PFS      | 110        |      | 0.71 [0.43 - 1.17] | 0.181207|
| Prostate cancer |        |            |      |                    |          |
| GSE16560    | OS       | 281        |      | 0.90 [0.62 - 1.32] | 0.60319|
| Skin cancer |          |            |      |                    |          |
| GSE19234    | OS       | 38         |      | 6.18 [1.38 - 27.74]| 0.017363|
| GSE19234    | OS       | 38         |      | 3.11 [0.93 - 10.38]| 0.064624|
| Soft tissue cancer |    |            |      |                    |          |
| GSE30929    | DRFS     | 140        |      | 1.46 [0.65 - 3.26] | 0.360254|
| GSE30929    | DRFS     | 140        |      | 0.91 [0.41 - 2.04] | 0.824674|