## SUPPLEMENTARY TABLES

### Supplementary Table 1. 
*C12orf75* expression in cancerous versus normal tissue in ONCOMINE.

| Cancer Site          | Cancer Type                                      | P Value | Sample Size | Fold Change | Up/Down Regulated | Reference (PMID) |
|----------------------|--------------------------------------------------|---------|-------------|-------------|-------------------|------------------|
| **Cervical**         |                                                  |         |             |             |                   |                  |
| Cervical             | Cervical Cancer                                  | 1.22E-09| 20          | 5.543       | 368 (2%)          | 17510386         |
| Colorectal           | Colon Carcinoma                                  | 2.36E-08| 5           | 2.962       | 479 (3%)          | 20957034         |
|                     | Colon Adenoma                                    | 8.79E-06| 5           | 1.8         | 861 (5%)          | 20957034         |
| **Esophageal**       |                                                  |         |             |             |                   |                  |
| Esophageal           | Esophageal Squamous Cell Carcinoma               | 9.13E-14| 51          | 2.423       | 596 (4%)          | 21385931         |
| **Head and Neck**    |                                                  |         |             |             |                   |                  |
| Head and Neck        | Tongue Carcinoma                                 | 2.68E-07| 15          | 4.791       | 199 (2%)          | 17510386         |
|                     | Oropharyngeal Carcinoma                          | 2.96E-05| 6           | 5.965       | 361 (2%)          | 17510386         |
|                     | Oral Cavity Carcinoma                            | 1.83E-04| 4           | 6.719       | 411 (3%)          | 17510386         |
|                     | Floor of the Mouth Carcinoma                     | 5.45E-04| 5           | 7.062       | 1698 (9%)         | 17510386         |
|                     | Oral Cavity Squamous Cell Carcinoma              | 6.59E-13| 57          | 2.582       | 428 (3%)          | 21853135         |
|                     | Thyroid Gland Papillary Carcinoma                | 2.69E-04| 9           | 1.74        | 532 (3%)          | 16365291         |
| **Kidney**           |                                                  |         |             |             |                   |                  |
| Kidney               | Chromophobe Renal Cell Carcinoma                 | 7.02E-06| 4           | 9.054       | 28 (1%)           | 19445733         |
|                     | Renal Oncocytoma                                 | 2.66E-05| 4           | 9.057       | 155 (1%)          | 19445733         |
|                     | Papillary Renal Cell Carcinoma                   | 7.24E-05| 19          | 3.332       | 484 (3%)          | 19445733         |
| **Leukemia**         |                                                  |         |             |             |                   |                  |
| Leukemia             | T- Cell Acute Lymphoblastic Leukemia             | 2.98E-08| 10          | 3.713       | 227 (3%)          | 17410184         |
|                     | B- Cell Acute Lymphoblastic Leukemia             | 2.00E-12| 86          | 2.787       | 283 (3%)          | 17410184         |
|                     | T- Cell Acute Lymphoblastic Leukemia             | 4.23E-30| 174         | 2.379       | 718 (4%)          | 20406941         |
|                     | Pro-B Acute Lymphoblastic Leukemia               | 5.46E-19| 70          | 2.343       | 1075 (6%)         | 20406941         |
|                     | Chronic Myelogenous Leukemia                    | 2.90E-13| 76          | –1.654      | 337 (2%)          | 20406941         |
| **Liver**            |                                                  |         |             |             |                   |                  |
| Liver                | Hepatocellular Carcinoma                         | 4.88E-07| 35          | 3.019       | 367 (2%)          | 17393520         |
| **Lymphoma**         |                                                  |         |             |             |                   |                  |
| Lymphoma             | Germinall Center B-Cell-Like Diffuse Large B-Cell Lymphoma | 8.54E-04| 16      | –1.786 | 251 (9%) | 10676951 |
| **Myeloma**          |                                                  |         |             |             |                   |                  |
| Myeloma              | Monoclonal Gammopathy of Undetermined Significance | 4.87E-07| 44          | –2.004      | 265 (2%)          | 17023574         |
| **Melanoma**         |                                                  |         |             |             |                   |                  |
| Melanoma             | Skin Squamous Cell Carcinoma                     | 2.20E-04| 11          | 3.278       | 917 (5%)          | 18442402         |
| **Seminoma**         |                                                  |         |             |             |                   |                  |
| Seminoma             | Mixed Germ Cell Tumor                            | 1.01E-07| 41          | –2.284      | 1681 (10%)        | 16424014         |
| **Ovarian**          |                                                  |         |             |             |                   |                  |
| Ovarian              | Ovarian Clear Cell Adenocarcinoma                | 7.22E-04| 7           | 4.867       | 285 (2%)          | 15161682         |
| **Prostate**         |                                                  |         |             |             |                   |                  |
| Prostate             | Prostate Carcinoma                               | 1.28E-15| 62          | –2.285      | 75 (1%)           | 14711987         |
|                     | Prostate Carcinoma                               | 6.78E-04| 13          | –3.022      | 547 (3%)          | 19737960         |
Supplementary Table 2. Prognostic analysis of C12orf75 expression for overall survival in the clinicopathologic features of TCGA-BLCA.

| Variable                              | Group A vs. Group B | Univariate Cox | Multivariate Cox |
|---------------------------------------|---------------------|----------------|------------------|
|                                       | Group A             | Group B        |                  |                  |
|                                       | Total No. Patients (%) | Total No. Patients (%) | HR (95% CI) | P     | HR (95% CI) | p     |
| C12orf75                              | High Group          | Low Group      |                  |                  |
|                                       | 203 (50%)           | 203 (50%)      | 1.39 (1.04–1.87) | 0.027 | 2.28 (1.13–4.58) | 0.021 |
| Age                                   | ≥60                 | <60            | 1.96 (1.28–3.02) | 0.002 | 1.59 (0.54–4.72) | 0.403 |
| Extracapsular Extension Status        | Focal               | Extensive      | 1.15 (0.5–2.63)  | 0.749 |                  |       |
| Clinical T                            | T 3–4               | T 1–2          | 1.44 (0.9–2.31)  | 0.127 |                  |       |
| Diagnosis Subtype                     | Papillary           | On-Papillary   | 0.69 (0.49–0.98) | 0.035 | 1.46 (0.66–3.22) | 0.349 |
| Disease Extracapsular Extension       | YES                 | NO             | 1.29 (0.83–2.01) | 0.255 |                  |       |
| Gleason Score                         | >7                  | ≤6             | 0.89 (0.46–1.74) | 0.74  |                  |       |
| Lymphovascular Invasion               | YES                 | NO             | 2.33 (1.6–3.39)  | <0.001| 2.3 (0.98–5.39)  | 0.056 |
| Histologic Grade                      | High                | Low            | 2.93 (0.73–11.93)| 0.111 |                  |       |
| Lymphonodus Positive                  | Positive            | Negative       | 2.02 (1.46–2.81) | <0.001| 1.39 (0.62–3.12) | 0.42  |
| Pathologic M                          | M1                  | MO             | 1.08 (0.73–1.6)  | 0.7   |                  |       |
| Pathologic T                          | T3-4                | T1-2           | 3.22 (1.54–6.73) | 0.001 | 1.37 (0.38–4.93) | 0.632 |
| Gender                                | Male                | Female         | 1.28 (0.68–2.43) | 0.44  |                  |       |
| Race                                  | Asian               | White          | 0.86 (0.62–1.19) | 0.353 |                  |       |
| Tumor Stage                           | Stage III-IV        | Stage I-II     | 0.62 (0.31–1.21) | 0.156 |                  |       |
| BMI                                    | ≥25                 | <25            | 2.26 (1.56–3.27) | <0.001| 0.95 (0.14–6.47) | 0.961 |
| Number Pack Years Smoked              | ≥30                 | ≤30            | 1.03 (0.74–1.43) | 0.87  |                  |       |

P value for two-sided Wald test; Abbreviations: HR: hazard ratio; CI: confidence interval; BMI: Body Mass Index.
Supplementary Table 3. Prognostic analysis of C12orf75 expression for overall survival in the clinicopathologic features of TCGA-LIHC.

| Variable                        | Group A vs. Group B | Univariate Cox | Multi variate Cox |
|---------------------------------|---------------------|----------------|------------------|
| C12orf75                        | High Group (184/50%)| Low Group (184/50%) | HR (95% CI) | p         | HR (95% CI) | p         |
| Adjacent Tissue Inflammation Extent | YES (146/47%)      | NO (162/53%)  | 1.15 (0.71–1.87) | 0.564   | 1.19 (0.84–1.69) | 0.327   |
| Age                             | ≥60 (270/58%)       | <60 (198/42%) | 1.9 (0.76–3.23)  | 0.002   | 1.19 (0.84–1.69) | 0.327   |
| Albumin                         | <3.5g/dl (87/23%)  | ≥3.5g/dl (291/77%) | 1.12 (0.69–1.83) | 0.651   | 1.64 (0.81–3.33) | 0.164   |
| Child-Pugh Classification       | B+C (1) (33/11%)   | A (271/89%)  | 1.64 (0.81–3.33) | 0.164   | 1.64 (0.81–3.33) | 0.164   |
| Creatinine                      | >1.2mg/dl (57/15%) | ≤1.2mg/dl (327/85%) | 0.89 (0.5–1.6)  | 0.699   | 0.95 (0.57–1.6)  | 0.428   |
| Fibrosis Ishak Score            | 1–6 (167/58%)      | 0 (119/42%)  | 0.74 (0.45–1.22) | 0.238   | 0.74 (0.45–1.22) | 0.238   |
| Neoplasms Histologic Grade      | G3-4 (166/36%)     | G1-2 (295/64%) | 1.11 (0.78–1.59) | 0.557   | 1.11 (0.78–1.59) | 0.557   |
| Pathologic M                    | M1 (6/2%)          | M0 (337/98%) | 3.96 (1.42–12.58) | 0.012   | 3.96 (1.42–12.58) | 0.012   |
| Pathologic N                    | N1 (6/2%)          | N0 (312/98%) | 2 (0.49–8.17)   | 0.323   | 2 (0.49–8.17)   | 0.323   |
| Platelet                        | <150 (89/23%)      | ≥150 (302/77%) | 0.94 (0.57–1.53) | 0.797   | 0.94 (0.57–1.53) | 0.797   |
| Family Cancer History           | YES (162/40%)      | NO (248/60%) | 1.19 (0.82–1.72) | 0.352   | 1.19 (0.82–1.72) | 0.352   |
| Vascular Tumor                  | YES (134/33%)      | NO (270/67%) | 1.32 (0.87–2)   | 0.188   | 1.32 (0.87–2)   | 0.188   |
| Gender                          | Male (309/66%)     | Female (160/34%) | 0.8 (0.56–1.14) | 0.219   | 0.8 (0.56–1.14) | 0.219   |
| Race                            | Asian (171/40%)    | White (257/60%) | 0.76 (0.52–1.1) | 0.143   | 0.76 (0.52–1.1) | 0.143   |
| Tumor Stage                     | Stage III-IV (116/27%) | Stage I-II (319/73%) | 2.46 (1.7–3.57) | <0.001 | 2.46 (1.7–3.57) | <0.001 |
| BMI                             | ≥25 (208/50%)       | <25 (209/50%) | 0.81 (0.56–1.18) | 0.28    | 0.81 (0.56–1.18) | 0.28    |
| Weight of Samples               | >160g (229/49%)    | ≤160g (240/51%) | 3.21 (2.23–4.62) | <0.001 | 3.21 (2.23–4.62) | <0.001 |

*p value for two-sided Wald test; Abbreviations: HR: hazard ratio; CI: confidence interval; BMI: Body Mass Index.
## Supplementary Table 4. Prognostic analysis of C12orf75 expression for overall survival in the clinicopathologic features of TCGA-UVM.

| Variable                  | Group A vs. Group B | Univariate Cox | Multivariate Cox |
|---------------------------|--------------------|----------------|------------------|
|                           | Group A            | Total No. Patients (%) | Group B          | Total No. Patients (%) | HR (95% CI) | p     | HR (95% CI) | p  |
| C12orf75                  | High Group         | 40 (50%)         | Low Group        | 40 (50%)         | 7.08 (2.6–19.25) | <0.001 | 5.88 (1.94–17.8) | 0.002 |
| Age                       | ≥60                | 44 (55%)         | <60              | 36 (45%)         | 1.84 (0.79–4.27) | 0.151  |                |    |
| Clinical T                | T4                 | 38 (49%)         | T2-3             | 40 (51%)         | 2.42 (0.96–6.06) | 0.052  |                |    |
| Clinical Stage            | Stage III-IV       | 44 (55%)         | Stage II         | 36 (45%)         | 1.72 (0.7–4.19)  | 0.229  |                |    |
| Extrascleral Extension    | YES                | 7 (9%)           | NO               | 68 (91%)         | 4.64 (1.5–14.37) | 0.003  | 2.02 (0.62–6.57) | 0.242 |
| Pathologic T              | T4                 | 34 (42%)         | T2-3             | 46 (58%)         | 1.74 (0.76–3.99) | 0.187  |                |    |
| Radiation Therapy         | YES                | 8 (12%)          | NO               | 58 (88%)         | 2.71 (0.68–10.87) | 0.143  |                |    |
| Tumor Basal Diameter      | ≥17                | 40 (51%)         | <17              | 39 (49%)         | 2.49 (1.61–6.18) | 0.043  | 2.97 (0.75–11.75) | 0.121 |
| Tumor Shape               | Mushroom           | 13 (27%)         | Dome             | 36 (73%)         | 0.58 (0.16–2.06) | 0.392  |                |    |
| Gender                    | Male               | 45 (56%)         | Female           | 35 (44%)         | 1.54 (0.65–3.65) | 0.321  |                |    |
| Tumor Stage               | Stage III-IV       | 40 (51%)         | Stage I-II       | 39 (49%)         | 1.5 (0.63–3.58)  | 0.356  |                |    |
| BMI                       | ≥25                | 36 (68%)         | <25              | 17 (32%)         | 1.17 (0.37–3.68) | 0.789  |                |    |

*P* value for two-sided Wald test; Abbreviations: HR: hazard ratio; CI: confidence interval; BMI: Body Mass Index.
Supplementary Table 5. Prognostic analysis of C12orf75 expression for overall survival in the clinicopathologic features of TCGA-KIRP.

| Variable                  | Group A vs. Group B | Univariate Cox | Multivariate Cox |
|---------------------------|---------------------|----------------|------------------|
|                           | Group A | Total No. Patients (%) | Group B | Total No. Patients (%) | HR (95% CI) | p | HR (95% CI) | p |
| C12orf75                  | High Group | 143 (50%) | Low Group | 143 (50%) | 0.52 (0.28–0.97) | 0.036 | 0.3 (0.11–0.82) | 0.019 |
| Age                       | ≥60     | 224 (59%) | <60 | 154 (41%) | 1.04 (0.56–1.94) | 0.888 | |
| Clinical T                | T3-4    | 57 (21%) | T1-2 | 210 (79%) | 4.66 (2.28–9.53) | <0.001 | 1.53 (0.44–5.4) | 0.507 |
| Hemoglobin                | Low     | 128 (48%) | Normal | 141 (52%) | 4.4 (1.88–10.26) | <0.001 | 2.59 (1.04–6.46) | 0.041 |
| Lactate Dehydrogenase     | Elevated | 11 (23%) | Normal | 36 (77%) | 1.88 (0.36–9.77) | 0.443 | |
| Laterality                | Right   | 168 (44%) | Left | 210 (56%) | 0.74 (0.39–1.38) | 0.342 | |
| Pathologic T              | T3-4    | 91 (24%) | T1-2 | 286 (76%) | 5.07 (2.76–9.3) | <0.001 | 2.73 (0.77–9.65) | 0.118 |
| Serum Calcium             | Low + Elevated | 68 (29%) | Normal | 169 (71%) | 1.66 (0.75–3.66) | 0.205 | |
| White Cell Count          | Low + Elevated | 72 (27%) | Normal | 196 (73%) | 1.44 (0.67–3.09) | 0.353 | |
| Gender                    | Male    | 282 (74%) | Female | 99 (26%) | 0.63 (0.33–1.21) | 0.164 | |
| Race                      | Black   | 75 (21%) | White | 277 (79%) | 0.92 (0.41–2.09) | 0.853 | |
| BMI                       | ≥25     | 208 (76%) | <25 | 67 (24%) | 0.71 (0.32–1.55) | 0.39 | |
| Pack Years Smoked         | ≥24     | 43 (49%) | <24 | 45 (51%) | 3.38 (0.71–16.06) | 0.104 | |
| Initial Weight            | >170    | 101 (49%) | ≤170 | 107 (51%) | 0.81 (0.36–1.83) | 0.615 | |
| Longest Dimension         | >1.7    | 36 (21%) | ≤1.7 | 137 (79%) | 0.79 (0.26–2.37) | 0.672 | |

*p value for two-sided Wald test; Abbreviations: HR: hazard ratio; CI: confidence interval; BMI: Body Mass Index.
Supplementary Table 6. Analysis of correlations expression between C1orf75 and Gene Markers of Immune Cells in MEso, UCS, and UVM by TIMER.

| Cell type           | Gene marker | MEso (n = 87) |     | UCS (n = 57) |     | UVM (n = 80) |     |
|---------------------|-------------|---------------|-----|--------------|-----|--------------|-----|
|                     |             | Cor    | p    | Cor    | p    | Cor    | p    |
| B cell              | CD19        | 0.136  | 0.353 | 0.102  | 0.354 | 0.233  | *    |
|                     | MS4A1       | 0.078  | 0.591 | 0.183  | 0.591 | 0.281  | **   |
|                     | CD38        | 0.140  | 0.353 | 0.339  | 0.354 | 0.419  | ***  |
| CD8+ T Cell         | CD8A        | 0.278  | 0.075 | 0.215  | 0.076 | 0.565  | ***  |
|                     | CD8B        | 0.232  | 0.096 | 0.149  | 0.097 | 0.582  | ***  |
|                     | CXCR5       | 0.104  | 0.473 | –0.092 | 0.474 | 0.382  | ***  |
|                     | ICOS        | 0.092  | 0.473 | 0.224  | 0.474 | 0.561  | ***  |
|                     | BCL6        | 0.344  | *    | –0.137 | *    | 0.252  | *    |
| Th                  | IL12RB2     | 0.178  | 0.258 | 0.092  | 0.259 | –0.485 | ***  |
|                     | IL27RA      | 0.137  | 0.415 | 0.354  | 0.415 | 0.573  | ***  |
|                     | TBX21       | 0.039  | 0.669 | 0.177  | 0.67  | 0.434  | ***  |
| Th2                 | CCR3        | 0.111  | 0.415 | 0.102  | 0.415 | 0.375  | ***  |
|                     | STAT6       | –0.165 | 0.272 | 0.355  | 0.273 | 0.457  | ***  |
|                     | GATA3       | 0.137  | 0.342 | 0.130  | 0.343 | 0.531  | ***  |
| Th9                 | TGFBR2      | 0.265  | 0.080 | 0.185  | 0.08  | 0.243  | *    |
|                     | IRF4        | 0.071  | 0.591 | –0.153 | 0.591 | –0.003 | 0.655 |
|                     | TNF         | 0.036  | 0.598 | 0.161  | 0.598 | 0.531  | ***  |
| Th17                | IL21R       | 0.235  | 0.090 | –0.055 | 0.091 | 0.524  | ***  |
|                     | IL23R       | 0.009  | 0.821 | 0.057  | 0.821 | 0.304  | **   |
|                     | STAT3       | 0.086  | 0.591 | –0.041 | 0.591 | 0.599  | ***  |
| Th22                | CCR10       | 0.086  | 0.706 | –0.295 | 0.706 | 0.311  | **   |
|                     | AHR         | 0.390  | *    | 0.279  | *    | 0.513  | ***  |
| Treg                | FOXP3       | 0.148  | 0.393 | 0.234  | 0.393 | 0.398  | ***  |
|                     | CCR8        | 0.212  | 0.258 | 0.264  | 0.259 | 0.343  | ***  |
|                     | IL2RA       | 0.107  | 0.591 | 0.166  | 0.591 | 0.408  | ***  |
| T cell exhaustion   | PDCD1       | 0.032  | 0.677 | 0.051  | 0.677 | 0.618  | ***  |
|                     | CTLA4       | 0.061  | 0.591 | 0.155  | 0.591 | 0.482  | ***  |
| Macrophage          | CD68        | 0.083  | 0.591 | 0.173  | 0.591 | 0.244  | *    |
|                     | ITGAM       | 0.238  | 0.090 | 0.035  | 0.091 | 0.440  | ***  |
| M1                  | NOS2        | 0.060  | 0.805 | –0.119 | 0.806 | 0.258  | **   |
|                     | ROS1        | 0.288  | 0.050 | –0.041 | 0.05  | –0.178 | 0.187 |
| M2                  | ARG1        | –0.060 | 0.805 | 0.064  | 0.806 | 0.049  | 0.438 |
|                     | MRC1        | 0.036  | 0.926 | 0.163  | 0.926 | 0.362  | ***  |
| TAM                 | HLA-G       | –0.134 | 0.591 | 0.425  | 0.591 | 0.404  | ***  |
|                     | CD80        | 0.010  | 0.985 | 0.055  | 0.986 | 0.284  | **   |
|                     | CD86        | 0.155  | 0.346 | 0.121  | 0.347 | 0.586  | ***  |
| Monocyte            | CD14        | 0.134  | 0.353 | 0.170  | 0.354 | 0.552  | ***  |
|                     | FCGR3A      | 0.168  | 0.298 | 0.066  | 0.298 | 0.532  | ***  |
| NK                  | XCL1        | 0.171  | 0.258 | 0.037  | 0.259 | 0.391  | ***  |
|                     | KIR3DL1     | 0.123  | 0.353 | 0.262  | 0.354 | 0.258  | **   |
| Neutrophil          | CD7         | 0.146  | 0.320 | 0.139  | 0.321 | 0.599  | ***  |
|                     | FUT4        | 0.488  | ***  | –0.029 | ***  | 0.303  | **   |
| DC                  | MPO         | –0.059 | 0.926 | –0.129 | 0.926 | 0.016  | 0.991 |
|                     | CD1C        | 0.035  | 0.926 | 0.047  | 0.926 | 0.214  | *    |
|                     | THBD        | 0.203  | 0.180 | –0.145 | 0.181 | 0.390  | ***  |

Cor value of Spearman’s correlation. p values were corrected using the Benjamini-Hochberg method. *p < 0.05; **p < 0.01; ***p < 0.001.
Supplementary Table 7. DNA Methylation Analysis of C12orf75 in pan-cancer by DNMIVD.

| Disease | Gene Symbol | Pearson $r$ | Pearson $p$ value | Spearman $r$ | Spearman $p$ value |
|---------|-------------|-------------|-------------------|--------------|-------------------|
| BLCA    | C12orf75    | -0.181      | 0.000             | -0.162       | 0.001             |
| BRCA    | C12orf75    | -0.153      | 0.000             | 0.004        | 0.903             |
| CESC    | C12orf75    | -0.035      | 0.535             | 0.011        | 0.847             |
| CHOL    | C12orf75    | -0.072      | 0.640             | -0.158       | 0.299             |
| COAD    | C12orf75    | 0.002       | 0.975             | -0.032       | 0.566             |
| ESCA    | C12orf75    | -0.207      | 0.007             | -0.078       | 0.311             |
| GBM     | C12orf75    | 0.040       | 0.753             | -0.013       | 0.917             |
| HNSC    | C12orf75    | -0.006      | 0.883             | 0.071        | 0.104             |
| KIRC    | C12orf75    | -0.049      | 0.363             | -0.048       | 0.377             |
| KIRP    | C12orf75    | 0.132       | 0.023             | 0.151        | 0.009             |
| LIHC    | C12orf75    | -0.119      | 0.016             | -0.153       | 0.002             |
| LUAD    | C12orf75    | -0.259      | 9.8e-9            | -0.229       | 4.548e-7          |
| LUSC    | C12orf75    | -0.151      | 0.003             | -0.131       | 0.011             |
| PAAD    | C12orf75    | -0.070      | 0.346             | -0.119       | 0.111             |
| PCPG    | C12orf75    | -0.040      | 0.591             | -0.006       | 0.930             |
| PRAD    | C12orf75    | 0.038       | 0.380             | 0.043        | 0.319             |
| READ    | C12orf75    | -0.125      | 0.212             | -0.169       | 0.092             |
| SARC    | C12orf75    | 0.102       | 0.098             | 0.107        | 0.084             |
| SKCM    | C12orf75    | -0.051      | 0.270             | 0.020        | 0.672             |
| STAD    | C12orf75    | -0.183      | 0.001             | -0.078       | 0.156             |
| THCA    | C12orf75    | -0.118      | 0.005             | -0.103       | 0.015             |
| THYM    | C12orf75    | 0.122       | 0.181             | 0.084        | 0.362             |