**Supplementary Materials**

**Stress-inducible SCAN transcription factors suppress stress response and are biomarkers for better prognoses in cancers**

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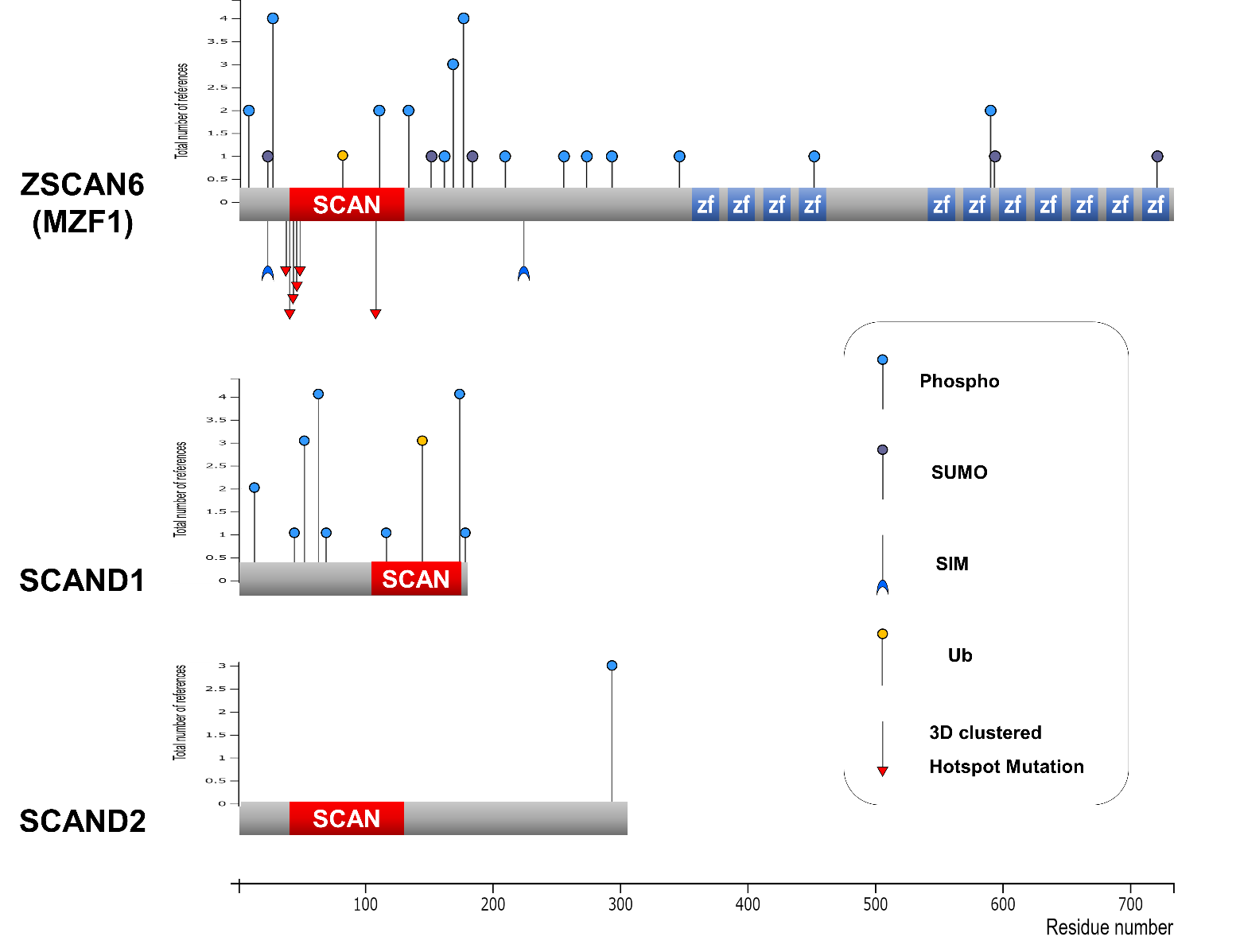
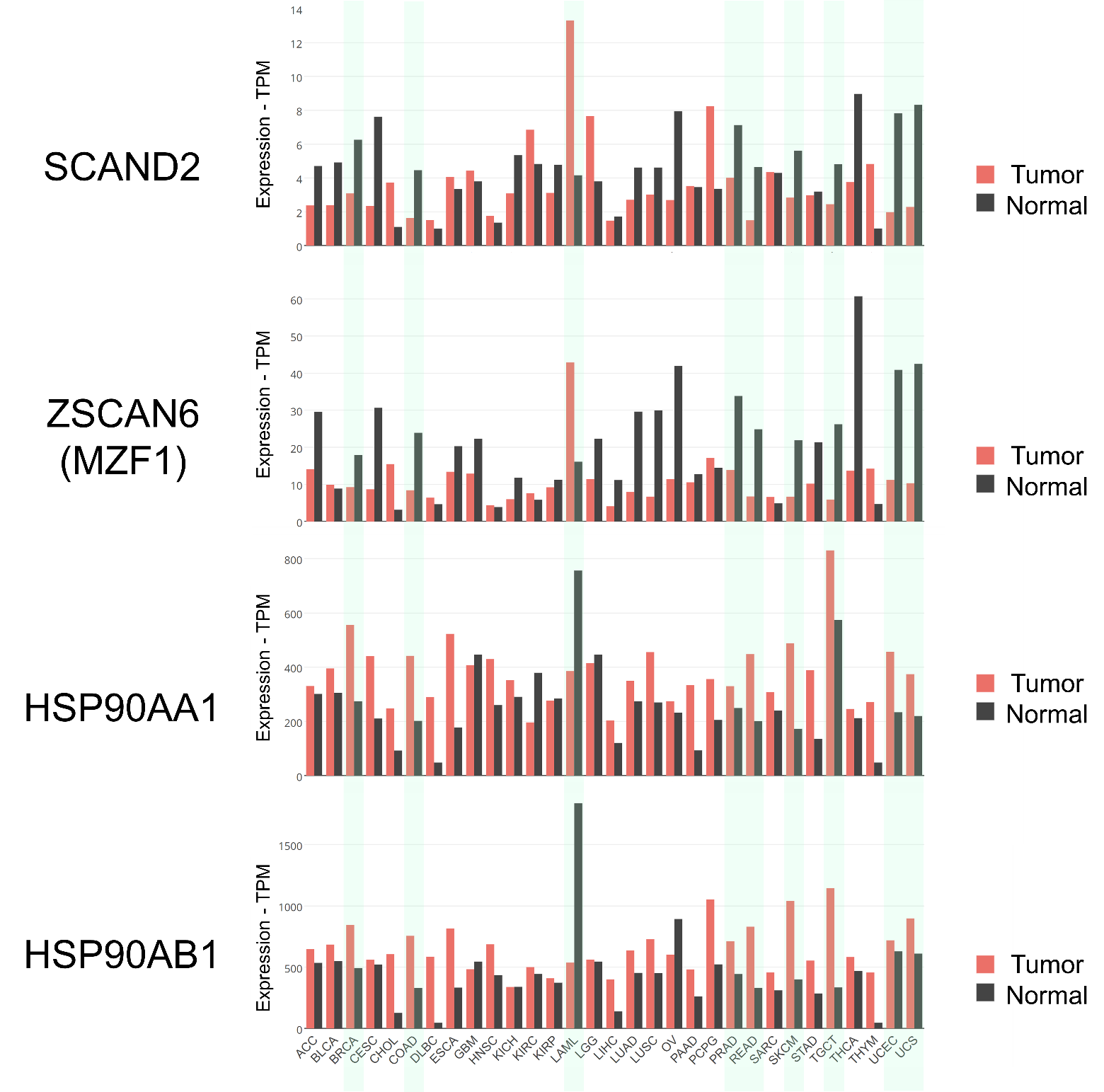
**Figure S1.** Protein structures of MZF1(ZSCAN6), SCAND1, and SCAND2. Post-translational modifications (PTM) and hotspot mutation were mapped. SCAN, SCAN domain. zf, zinc finger domain. Phospho, phosphorylation site. SUMO, sumoylation site. SIM, SUMO interaction motif. Ub, ubiquitination site. Some PTMs were shown in a ref. (Eguchi T et al., 2015, J Cell Biochem 116). This figure was shown as a supplemental item in ref. (Eguchi T et al., 2022, Cells 11).

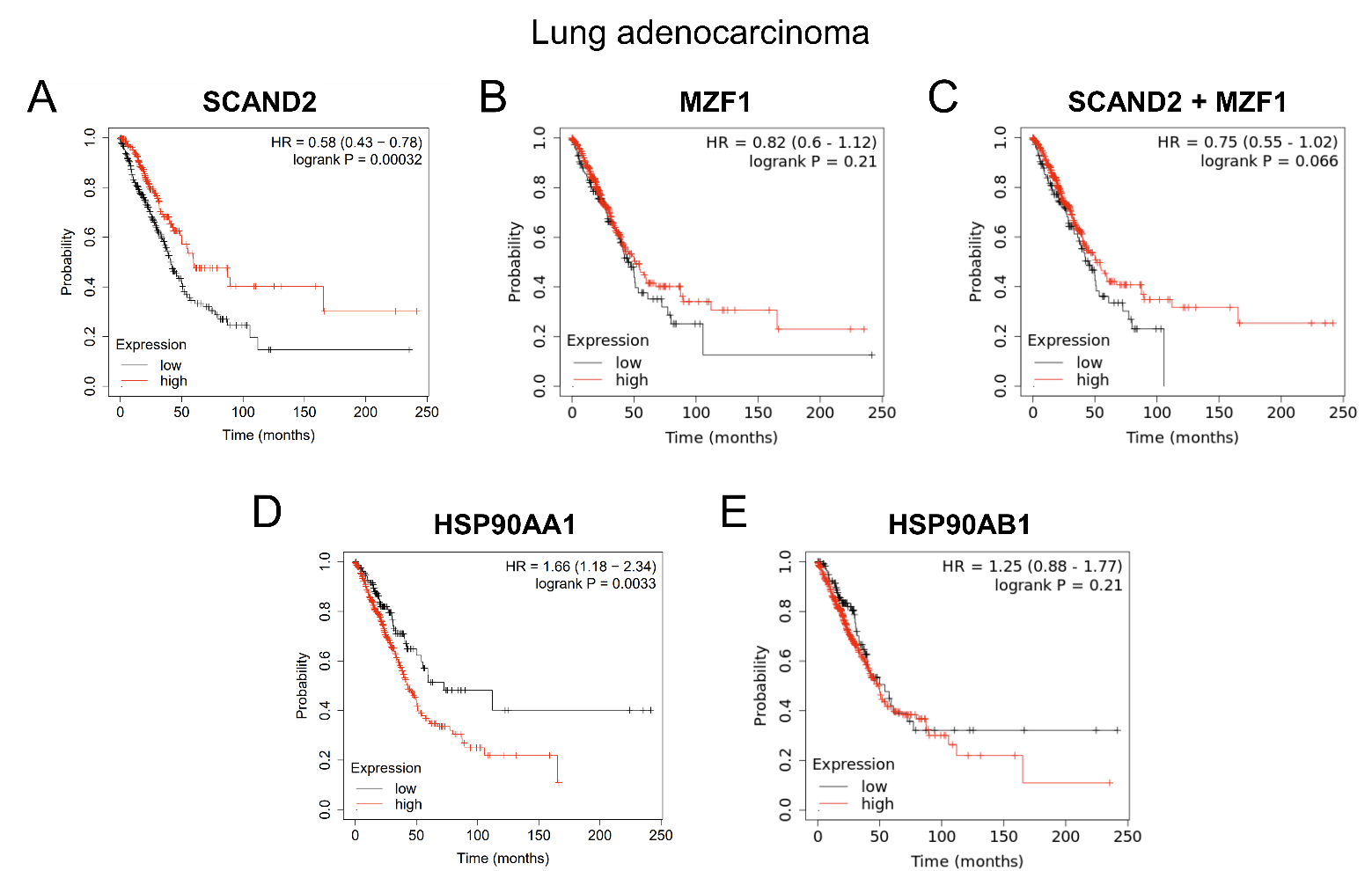
Table S1. Co-expression correlation of SCAN-TF genes vs. HSPs in prostate adenocarcinoma specimens.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **vs MZF1** | | | | **vs SCAND1** | | | | **vs SCAND2** | | | |
| Correlated Gene | Spearman's Correlation | p-Value | q-Value | Correlated Gene | Spearman's Correlation | p-Value | q-Value | Correlated Gene | Spearman's Correlation | p-Value | q-Value |
| HSPBP1 | 0.504 | 8.89E-33 | 2.82E-31 | HSPBP1 | 0.778 | 2.90E-100 | 1.81E-97 | HSPBP1 | 0.159 | 4.34E-04 | 1.54E-03 |
| ***HSPA13*** | **-0.448** | **1.75E-25** | **3.29E-24** | ***HSPA13*** | **-0.572** | **7.79E-44** | **1.05E-42** | ***HSPA13*** | **-0.357** | **4.18E-16** | **9.13E-15** |
| ***HSPA4*** | **-0.358** | **3.41E-16** | **2.70E-15** | ***HSPA4*** | **-0.303** | **7.97E-12** | **2.47E-11** | ***HSPA4*** | **-0.394** | **1.52E-19** | **4.80E-18** |
| HSPBAP1 | 0.354 | 6.99E-16 | 5.37E-15 | HSPBAP1 | 0.347 | 2.94E-15 | 1.09E-14 | HSPBAP1 | 0.281 | 2.62E-10 | 2.80E-09 |
| HSPB11 | 0.352 | 1.08E-15 | 8.16E-15 | HSPB11 | 0.516 | 1.36E-34 | 1.20E-33 | HSPB11 | 0.248 | 2.99E-08 | 2.35E-07 |
| ***HSPA4L*** | **-0.326** | **1.58E-13** | **9.53E-13** | ***HSPA4L*** | **-0.411** | **2.66E-21** | **1.32E-20** | HSPA4L | -0.0341 | 0.452 | 0.571 |
| ***HSP90AA1*** | **-0.321** | **3.63E-13** | **2.11E-12** | HSP90AA1 | -0.188 | 2.86E-05 | 5.87E-05 | ***HSP90AA1*** | **-0.32** | **4.34E-13** | **6.62E-12** |
| ***HSPH1*** | -0.3 | **1.42E-11** | **6.96E-11** | HSPH1 | -0.191 | 2.20E-05 | 4.55E-05 | ***HSPH1*** | **-0.312** | **1.67E-12** | **2.37E-11** |
| HSPA7 | 0.298 | 1.69E-11 | 8.21E-11 | HSPA7 | 0.241 | 7.45E-08 | 1.84E-07 | HSPA7 | 0.277 | 4.54E-10 | 4.67E-09 |
| HSPB9 | 0.278 | 4.05E-10 | 1.70E-09 | HSPB9 | 0.342 | 7.59E-15 | 2.76E-14 | HSPB9 | 0.269 | 1.64E-09 | 1.56E-08 |
| ***HSP90B3P*** | -0.246 | 3.47E-08 | 1.20E-07 | HSP90B3P | -0.403 | 1.78E-20 | 8.51E-20 | HSP90B3P | -0.242 | 6.29E-08 | 4.72E-07 |
| HSPE1 | 0.216 | 1.38E-06 | 3.98E-06 | HSPE1 | 0.392 | 2.07E-19 | 9.38E-19 | HSPE1 | -0.124 | 6.20E-03 | 0.0161 |
| HSPB8 | -0.21 | 2.79E-06 | 7.77E-06 | HSPB8 | -0.0333 | 0.463 | 0.528 | HSPB8 | 0.0593 | 0.191 | 0.293 |
| HSPB7 | -0.203 | 6.01E-06 | 1.61E-05 | HSPB7 | -0.0237 | 0.602 | 0.66 | HSPB7 | 0.0263 | 0.563 | 0.672 |
| HSPA12A | -0.203 | 6.43E-06 | 1.72E-05 | HSPA12A | -0.149 | 9.59E-04 | 1.69E-03 | HSPA12A | 0.0673 | 0.138 | 0.225 |
| HSP90AB4P | 0.184 | 4.27E-05 | 1.03E-04 | HSP90AB4P | 0.189 | 2.55E-05 | 5.25E-05 | HSP90AB4P | 0.149 | 9.91E-04 | 3.21E-03 |
| HSPA1B | 0.176 | 9.23E-05 | 2.14E-04 | HSPA1B | 0.274 | 7.90E-10 | 2.19E-09 | HSPA1B | -0.0374 | 0.41 | 0.531 |
| ***HSPA5*** | -0.174 | 1.11E-04 | 2.54E-04 | HSPA5 | -0.212 | 2.41E-06 | 5.40E-06 | HSPA5 | -0.29 | 6.94E-11 | 8.09E-10 |
| ***HSPA8*** | -0.157 | 5.07E-04 | 1.06E-03 | HSPA8 | -0.352 | 1.07E-15 | 4.07E-15 | HSPA8 | -0.274 | 7.08E-10 | 7.10E-09 |
| HSPG2 | -0.151 | 7.93E-04 | 1.62E-03 | HSPG2 | -0.282 | 2.42E-10 | 6.88E-10 | HSPG2 | -0.0246 | 0.587 | 0.693 |
| ***HSP90AB2P*** | -0.15 | 8.69E-04 | 1.76E-03 | HSP90AB2P | -0.268 | 1.92E-09 | 5.20E-09 | HSP90AB2P | -0.202 | 6.80E-06 | 3.55E-05 |
| HSPA6 | 0.145 | 1.36E-03 | 2.69E-03 | HSPA6 | 0.163 | 2.94E-04 | 5.49E-04 | HSPA6 | 0.0642 | 0.157 | 0.25 |
| HSPA1A | 0.137 | 2.49E-03 | 4.72E-03 | HSPA1A | 0.279 | 3.51E-10 | 9.90E-10 | HSPA1A | -0.0836 | 0.0651 | 0.121 |
| HSPB6 | -0.134 | 2.95E-03 | 5.54E-03 | HSPB6 | 0.102 | 0.0244 | 0.0364 | HSPB6 | 0.0603 | 0.183 | 0.283 |
| HSPA14 | -0.117 | 9.41E-03 | 0.0163 | HSPA14 | -0.277 | 5.08E-10 | 1.42E-09 | HSPA14 | -0.0762 | 0.0928 | 0.163 |
| HSP90B1 | -0.112 | 0.0132 | 0.0223 | HSP90B1 | -0.167 | 2.04E-04 | 3.87E-04 | HSPB1 | 0.034 | 0.454 | 0.572 |
| HSPB3 | -0.112 | 0.0137 | 0.023 | HSPB3 | 0.0262 | 0.563 | 0.625 | HSPB3 | -0.0508 | 0.263 | 0.377 |
| HSPA1L | 0.0931 | 0.0397 | 0.0615 | HSPA1L | 0.0935 | 0.039 | 0.0564 | HSPA1L | 0.156 | 5.28E-04 | 1.84E-03 |
| ***HSP90AB1*** | -0.0746 | 0.0996 | 0.142 | HSP90AB1 | -0.11 | 0.0155 | 0.0238 | HSP90AB1 | -0.276 | 5.67E-10 | 5.76E-09 |
| HSPB2 | -0.0639 | 0.159 | 0.215 | HSPB2 | 0.177 | 8.44E-05 | 1.66E-04 | HSPB2 | 0.109 | 0.0159 | 0.0366 |
| HSPB1 | 0.0573 | 0.207 | 0.271 | HSPB1 | 0.45 | 9.36E-26 | 5.66E-25 | HSP90B1 | -0.244 | 4.93E-08 | 3.74E-07 |
| HSPA9 | -0.0491 | 0.279 | 0.351 | HSPA9 | -0.208 | 3.71E-06 | 8.17E-06 | HSPA9 | -0.246 | 3.54E-08 | 2.76E-07 |
| HSPA2 | -0.042 | 0.354 | 0.431 | HSPA2 | 0.204 | 5.40E-06 | 1.18E-05 | HSPA2 | -0.0254 | 0.576 | 0.684 |
| HSPD1 | -0.0358 | 0.43 | 0.508 | HSPD1 | -0.0162 | 0.721 | 0.767 | HSPD1 | -0.26 | 5.75E-09 | 5.05E-08 |
| HSPB1P1 | 0.0191 | 0.675 | 0.736 | HSPB1P1 | 0.406 | 9.63E-21 | 4.65E-20 | HSPB1P1 | 0.0196 | 0.665 | 0.757 |
| HSPA12B | 0.0161 | 0.723 | 0.778 | HSPA12B | 0.0806 | 0.0754 | 0.104 | HSPA12B | 0.135 | 2.77E-03 | 7.98E-03 |

Spearman’s correlation < -0.25 were shown in red. p-Values < 1E-10 were shown in yellow. q-Values < 1E-10 were shown in green.



**Figure S2.** Gene expression profiling of SCAND2, ZSCAN6(MZF1), and HSP90 genes in various tumor types vs. paired normal tissues.



**Figure S3.** Kaplan-Meier analysis of SCAN-TFs and HSP90 expression in lung adenocarcinoma. SCAND2 and MZF1 expression are correlated with a better prognosis, whereas HSP90 expression is correlated with a poor prognosis of lung adenocarcinoma.