

Table S19. Multivariate cox regression analysis of 25 genes and 15 genes in training and validation cohorts of other tumors.

| Tumor type | Cohort | Covariate | 25 genes | | 15 genes | | |
|------------|--------|-----------|------------------|-------------------|------------------|------------------|------------------|
| | | | P value | HR (CI95%) | P value | HR (CI95%) | |
| Breast | GIS | cluster | 0.086 | 1.66 (0.93-2.95) | 0.223 | 1.45 (0.80-2.63) | |
| | | grade | 0.007 | 1.80 (1.18-2.76) | 0.001 | 2.03 (1.36-3.04) | |
| | | age | 0.781 | 1.00 (0.98-1.02) | 0.893 | 1.00 (0.98-1.02) | |
| | CRCM | cluster | <0.0001 | 5.17 (2.63-10.17) | <0.0001 | 4.18 (2.20-7.97) | |
| | | grade | <0.0001 | 3.86 (2.18-6.85) | <0.0001 | 3.08 (1.76-5.40) | |
| | | age | 0.87 | 1.00 (0.97-1.03) | 0.642 | 0.99 (0.96-1.03) | |
| | SUSM | cluster | 0.029 | 1.78 (1.06-2.99) | 0.405 | 1.23 (0.76-1.98) | |
| | | grade | 0.001 | 2.21 (1.51-3.22) | <0.0001 | 2.51 (1.75-3.60) | |
| | | age | 0.018 | 0.95 (0.92-0.99) | 0.023 | 0.96 (0.92-0.99) | |
| | Lung | NCI | cluster | 0.04 | 2.22 (1.04-4.77) | 0.046 | 2.08 (1.01-4.26) |
| | | EMC | cluster | 0.001 | 1.86 (1.27-2.73) | 0.062 | 1.44 (0.98-2.12) |
| | | DFCI | cluster | 0.027 | 2.25 (1.10-4.61) | 0.019 | 2.37 (1.15-4.86) |
| | | | stage | 0.147 | 1.81 (0.81-4.04) | 0.187 | 1.72 (0.77-3.84) |
| | | | age | 0.12 | 1.03 (0.99-1.07) | 0.111 | 1.03 (0.99-1.07) |
| | | PCH | cluster | 0.448 | 1.39 (0.60-3.22) | 0.079 | 2.49 (0.90-6.88) |
| age | | | 0.361 | 1.02 (0.98-1.06) | 0.142 | 1.03 (0.99-1.08) | |
| CAN/DF | | cluster | 0.125 | 1.96 (0.83-4.65) | 0.416 | 1.34 (0.66-2.70) | |
| | | stage | 0.038 | 2.19 (1.05-4.59) | 0.002 | 2.99 (1.50-5.94) | |
| | | age | 0.001 | 1.08 (1.03-1.13) | 0.001 | 1.07 (1.03-1.12) | |
| MSK | | cluster | 0.221 | 1.69 (0.73-3.94) | 0.306 | 1.57 (0.66-3.70) | |
| | | stage | 0.156 | 1.93 (0.78-4.78) | 0.158 | 1.92 (0.78-4.76) | |
| | | age | 0.394 | 1.02 (0.97-1.07) | 0.303 | 1.03 (0.98-1.08) | |
| UM-HLM | | cluster | 0.485 | 1.15 (0.78-1.70) | 0.598 | 1.11 (0.76-1.63) | |
| | | stage | <0.0001 | 2.21 (1.47-3.32) | <0.0001 | 2.25 (1.51-3.36) | |
| | age | 0.001 | 1.03 (1.01-1.05) | 0.001 | 1.03 (1.01-1.05) | | |
| Bladder | AUH | cluster | 0.049 | 2.22 (1.02-4.86) | 0.072 | 2.05 (0.95-4.43) | |
| Ovarium | MNI | cluster | 0.419 | 1.59 (0.52-4.94) | 0.553 | 1.43 (0.44-4.72) | |
| | | age | 0.078 | 1.06 (0.99-1.12) | 0.114 | 1.05 (1.00-1.12) | |

The direction of the hazard ratio are as follows: cluster, the short-term versus long-term survival group; grade, lower versus higher; age, older versus younger.